



# JAMMU AND KASHMIR PUBLIC SERVICE COMMISSION

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**Subject: Written Examinations for the post(s) of Assistant Professor(s) (Accounting and Taxation Banking Corporation, Bioinformatics, Mathematics, Physics, Nutrition, Tour & Travel, Cost Accounting, Education, Horticulture Technology, Handloom & Handicrafts and Music/Music Instrumental Vocal) in Higher Education Department, 2023 -Provisional Answer Key.**

**Notification No. PSC/Exam/S/2023/81**

**Dated: 10.11.2023**

In pursuance of Rule 10(c) of the Jammu & Kashmir Public Service Commission (Conduct of Examination) Rules, 2022, as amended upto date, the Provisional Answer Key(s) of Question Paper pertaining to the Written Examinations for the post(s) of **Assistant Professor(s) (Accounting and Taxation Banking Corporation, Bioinformatics, Mathematics, Physics, Nutrition, Tour & Travel, Cost Accounting, Education, Horticulture Technology, Handloom & Handicrafts and Music/Music Instrumental Vocal) in Higher Education Department, 2023** held on **05.11.2023**, are hereby notified for seeking the objections from candidates.

## Provisional Answer Key Assistant Professor

### (Accounting and Taxation Banking Corporation)

| Test Booklet Question No.<br>(Series A) |   | Test Booklet Question No.<br>(Series A) |   | Test Booklet Question No.<br>(Series A) |   |
|---|---|---|---|---|---|
| Q1.                                     | B | Q15.                                    | B | Q29.                                    | C |
| Q2.                                     | C | Q16.                                    | B | Q30.                                    | C |
| Q3.                                     | A | Q17.                                    | C | Q31.                                    | B |
| Q4.                                     | C | Q18.                                    | C | Q32.                                    | C |
| Q5.                                     | C | Q19.                                    | D | Q33.                                    | C |
| Q6.                                     | C | Q20.                                    | B | Q34.                                    | D |
| Q7.                                     | C | Q21.                                    | B | Q35.                                    | C |
| Q8.                                     | B | Q22.                                    | A | Q36.                                    | B |
| Q9.                                     | C | Q23.                                    | C | Q37.                                    | D |
| Q10.                                    | B | Q24.                                    | D | Q38.                                    | C |
| Q11.                                    | D | Q25.                                    | B | Q39.                                    | B |
| Q12.                                    | A | Q26.                                    | A | Q40.                                    | A |
| Q13.                                    | A | Q27.                                    | B | Q41.                                    | B |
| Q14.                                    | D | Q28.                                    | C | Q42.                                    | D |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q43.                                    | A |
| Q44.                                    | A |
| Q45.                                    | B |
| Q46.                                    | C |
| Q47.                                    | A |
| Q48.                                    | D |
| Q49.                                    | A |
| Q50.                                    | C |
| Q51.                                    | C |
| Q52.                                    | A |
| Q53.                                    | B |
| Q54.                                    | B |
| Q55.                                    | B |
| Q56.                                    | A |
| Q57.                                    | B |
| Q58.                                    | B |
| Q59.                                    | C |
| Q60.                                    | A |
| Q61.                                    | D |
| Q62.                                    | D |
| Q63.                                    | C |
| Q64.                                    | A |
| Q65.                                    | A |
| Q66.                                    | B |
| Q67.                                    | A |
| Q68.                                    | C |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q69.                                    | C |
| Q70.                                    | A |
| Q71.                                    | B |
| Q72.                                    | A |
| Q73.                                    | C |
| Q74.                                    | C |
| Q75.                                    | C |
| Q76.                                    | D |
| Q77.                                    | C |
| Q78.                                    | D |
| Q79.                                    | D |
| Q80.                                    | C |
| Q81.                                    | B |
| Q82.                                    | A |
| Q83.                                    | D |
| Q84.                                    | A |
| Q85.                                    | D |
| Q86.                                    | D |
| Q87.                                    | C |
| Q88.                                    | A |
| Q89.                                    | C |
| Q90.                                    | B |
| Q91.                                    | B |
| Q92.                                    | C |
| Q93.                                    | C |
| Q94.                                    | B |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q95.                                    | C |
| Q96.                                    | C |
| Q97.                                    | A |
| Q98.                                    | B |
| Q99.                                    | C |
| Q100.                                   | D |
| Q101.                                   | A |
| Q102.                                   | B |
| Q103.                                   | C |
| Q104.                                   | D |
| Q105.                                   | A |
| Q106.                                   | C |
| Q107.                                   | C |
| Q108.                                   | D |
| Q109.                                   | D |
| Q110.                                   | D |
| Q111.                                   | C |
| Q112.                                   | B |
| Q113.                                   | B |
| Q114.                                   | A |
| Q115.                                   | C |
| Q116.                                   | C |
| Q117.                                   | B |
| Q118.                                   | A |
| Q119.                                   | D |
| Q120.                                   | B |



**Provisional Answer Key Assistant Professor (Bioinformatics)**

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q1                                      | C |
| Q2                                      | B |
| Q3                                      | D |
| Q4                                      | D |
| Q5                                      | C |
| Q6                                      | A |
| Q7                                      | C |
| Q8                                      | C |
| Q9                                      | C |
| Q10                                     | B |
| Q11                                     | D |
| Q12                                     | B |
| Q13                                     | A |
| Q14                                     | C |
| Q15                                     | B |
| Q16                                     | C |
| Q17                                     | B |
| Q18                                     | C |
| Q19                                     | B |
| Q20                                     | D |
| Q21                                     | A |
| Q22                                     | B |
| Q23                                     | C |
| Q24                                     | B |
| Q25                                     | D |
| Q26                                     | A |
| Q27                                     | A |
| Q28                                     | B |
| Q29                                     | B |
| Q30                                     | B |
| Q31                                     | B |
| Q32                                     | D |
| Q33                                     | C |
| Q34                                     | A |
| Q35                                     | D |
| Q36                                     | C |
| Q37                                     | A |
| Q38                                     | C |
| Q39                                     | B |
| Q40                                     | A |
| Q41                                     | D |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q42                                     | C |
| Q43                                     | D |
| Q44                                     | C |
| Q45                                     | C |
| Q46                                     | B |
| Q47                                     | D |
| Q48                                     | C |
| Q49                                     | A |
| Q50                                     | C |
| Q51                                     | A |
| Q52                                     | A |
| Q53                                     | D |
| Q54                                     | B |
| Q55                                     | C |
| Q56                                     | B |
| Q57                                     | A |
| Q58                                     | A |
| Q59                                     | B |
| Q60                                     | B |
| Q61                                     | C |
| Q62                                     | A |
| Q63                                     | C |
| Q64                                     | B |
| Q65                                     | B |
| Q66                                     | C |
| Q67                                     | D |
| Q68                                     | A |
| Q69                                     | C |
| Q70                                     | A |
| Q71                                     | C |
| Q72                                     | B |
| Q73                                     | C |
| Q74                                     | A |
| Q75                                     | C |
| Q76                                     | C |
| Q77                                     | B |
| Q78                                     | C |
| Q79                                     | A |
| Q80                                     | A |
| Q81                                     | C |
| Q82                                     | B |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q83                                     | C |
| Q84                                     | B |
| Q85                                     | D |
| Q86                                     | D |
| Q87                                     | D |
| Q88                                     | D |
| Q89                                     | D |
| Q90                                     | C |
| Q91                                     | D |
| Q92                                     | D |
| Q93                                     | D |
| Q94                                     | B |
| Q95                                     | B |
| Q96                                     | C |
| Q97                                     | A |
| Q98                                     | A |
| Q99                                     | B |
| Q100                                    | D |
| Q101                                    | A |
| Q102                                    | A |
| Q103                                    | D |
| Q104                                    | B |
| Q105                                    | A |
| Q106                                    | A |
| Q107                                    | B |
| Q108                                    | D |
| Q109                                    | B |
| Q110                                    | C |
| Q111                                    | D |
| Q112                                    | C |
| Q113                                    | C |
| Q114                                    | A |
| Q115                                    | D |
| Q116                                    | D |
| Q117                                    | C |
| Q118                                    | C |
| Q119                                    | A |
| Q120                                    | D |



**Provisional Answer Key Assistant Professor (Mathematics)**

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q1                                      | C |
| Q2                                      | D |
| Q3                                      | D |
| Q4                                      | D |
| Q5                                      | D |
| Q6                                      | C |
| Q7                                      | D |
| Q8                                      | B |
| Q9                                      | C |
| Q10                                     | A |
| Q11                                     | A |
| Q12                                     | C |
| Q13                                     | A |
| Q14                                     | A |
| Q15                                     | A |
| Q16                                     | A |
| Q17                                     | D |
| Q18                                     | A |
| Q19                                     | D |
| Q20                                     | A |
| Q21                                     | A |
| Q22                                     | A |
| Q23                                     | C |
| Q24                                     | D |
| Q25                                     | A |
| Q26                                     | B |
| Q27                                     | C |
| Q28                                     | D |
| Q29                                     | C |
| Q30                                     | D |
| Q31                                     | B |
| Q32                                     | B |
| Q33                                     | C |
| Q34                                     | C |
| Q35                                     | B |
| Q36                                     | D |
| Q37                                     | A |
| Q38                                     | A |
| Q39                                     | D |
| Q40                                     | B |
| Q41                                     | B |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q42                                     | A |
| Q43                                     | D |
| Q44                                     | A |
| Q45                                     | B |
| Q46                                     | C |
| Q47                                     | B |
| Q48                                     | A |
| Q49                                     | B |
| Q50                                     | C |
| Q51                                     | D |
| Q52                                     | C |
| Q53                                     | A |
| Q54                                     | B |
| Q55                                     | B |
| Q56                                     | A |
| Q57                                     | B |
| Q58                                     | A |
| Q59                                     | C |
| Q60                                     | C |
| Q61                                     | D |
| Q62                                     | C |
| Q63                                     | B |
| Q64                                     | B |
| Q65                                     | A |
| Q66                                     | D |
| Q67                                     | C |
| Q68                                     | C |
| Q69                                     | C |
| Q70                                     | C |
| Q71                                     | A |
| Q72                                     | D |
| Q73                                     | D |
| Q74                                     | D |
| Q75                                     | A |
| Q76                                     | C |
| Q77                                     | D |
| Q78                                     | C |
| Q79                                     | D |
| Q80                                     | B |
| Q81                                     | A |
| Q82                                     | C |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q83                                     | A |
| Q84                                     | B |
| Q85                                     | A |
| Q86                                     | D |
| Q87                                     | D |
| Q88                                     | D |
| Q89                                     | B |
| Q90                                     | A |
| Q91                                     | C |
| Q92                                     | D |
| Q93                                     | D |
| Q94                                     | D |
| Q95                                     | B |
| Q96                                     | B |
| Q97                                     | B |
| Q98                                     | A |
| Q99                                     | A |
| Q100                                    | B |
| Q101                                    | B |
| Q102                                    | A |
| Q103                                    | B |
| Q104                                    | A |
| Q105                                    | D |
| Q106                                    | D |
| Q107                                    | B |
| Q108                                    | B |
| Q109                                    | B |
| Q110                                    | B |
| Q111                                    | A |
| Q112                                    | B |
| Q113                                    | C |
| Q114                                    | B |
| Q115                                    | A |
| Q116                                    | D |
| Q117                                    | B |
| Q118                                    | D |
| Q119                                    | A |
| Q120                                    | B |



### Provisional Answer Key Assistant Professor (Physics)

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q1                                      | A |
| Q2                                      | B |
| Q3                                      | A |
| Q4                                      | C |
| Q5                                      | B |
| Q6                                      | C |
| Q7                                      | B |
| Q8                                      | A |
| Q9                                      | D |
| Q10                                     | C |
| Q11                                     | A |
| Q12                                     | D |
| Q13                                     | C |
| Q14                                     | A |
| Q15                                     | C |
| Q16                                     | A |
| Q17                                     | A |
| Q18                                     | C |
| Q19                                     | C |
| Q20                                     | A |
| Q21                                     | C |
| Q22                                     | C |
| Q23                                     | C |
| Q24                                     | C |
| Q25                                     | A |
| Q26                                     | A |
| Q27                                     | B |
| Q28                                     | C |
| Q29                                     | A |
| Q30                                     | A |
| Q31                                     | B |
| Q32                                     | A |
| Q33                                     | C |
| Q34                                     | D |
| Q35                                     | A |
| Q36                                     | C |
| Q37                                     | C |
| Q38                                     | B |
| Q39                                     | D |
| Q40                                     | B |
| Q41                                     | C |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q42                                     | D |
| Q43                                     | C |
| Q44                                     | B |
| Q45                                     | B |
| Q46                                     | A |
| Q47                                     | B |
| Q48                                     | C |
| Q49                                     | C |
| Q50                                     | A |
| Q51                                     | A |
| Q52                                     | A |
| Q53                                     | A |
| Q54                                     | D |
| Q55                                     | C |
| Q56                                     | A |
| Q57                                     | A |
| Q58                                     | B |
| Q59                                     | A |
| Q60                                     | A |
| Q61                                     | C |
| Q62                                     | C |
| Q63                                     | B |
| Q64                                     | B |
| Q65                                     | B |
| Q66                                     | D |
| Q67                                     | A |
| Q68                                     | A |
| Q69                                     | B |
| Q70                                     | C |
| Q71                                     | C |
| Q72                                     | A |
| Q73                                     | C |
| Q74                                     | C |
| Q75                                     | C |
| Q76                                     | B |
| Q77                                     | D |
| Q78                                     | B |
| Q79                                     | C |
| Q80                                     | B |
| Q81                                     | B |
| Q82                                     | A |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q83                                     | B |
| Q84                                     | D |
| Q85                                     | A |
| Q86                                     | B |
| Q87                                     | B |
| Q88                                     | A |
| Q89                                     | B |
| Q90                                     | A |
| Q91                                     | C |
| Q92                                     | D |
| Q93                                     | B |
| Q94                                     | A |
| Q95                                     | D |
| Q96                                     | B |
| Q97                                     | B |
| Q98                                     | A |
| Q99                                     | B |
| Q100                                    | B |
| Q101                                    | A |
| Q102                                    | B |
| Q103                                    | D |
| Q104                                    | B |
| Q105                                    | B |
| Q106                                    | D |
| Q107                                    | A |
| Q108                                    | D |
| Q109                                    | A |
| Q110                                    | C |
| Q111                                    | C |
| Q112                                    | D |
| Q113                                    | C |
| Q114                                    | C |
| Q115                                    | A |
| Q116                                    | A |
| Q117                                    | B |
| Q118                                    | B |
| Q119                                    | D |
| Q120                                    | B |

**Provisional Answer Key Assistant Professor (Nutrition)**

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q1                                      | B |
| Q2                                      | A |
| Q3                                      | D |
| Q4                                      | A |
| Q5                                      | B |
| Q6                                      | D |
| Q7                                      | A |
| Q8                                      | A |
| Q9                                      | D |
| Q10                                     | D |
| Q11                                     | A |
| Q12                                     | A |
| Q13                                     | C |
| Q14                                     | C |
| Q15                                     | A |
| Q16                                     | A |
| Q17                                     | B |
| Q18                                     | C |
| Q19                                     | B |
| Q20                                     | B |
| Q21                                     | C |
| Q22                                     | C |
| Q23                                     | D |
| Q24                                     | B |
| Q25                                     | A |
| Q26                                     | D |
| Q27                                     | C |
| Q28                                     | D |
| Q29                                     | B |
| Q30                                     | C |
| Q31                                     | B |
| Q32                                     | A |
| Q33                                     | A |
| Q34                                     | D |
| Q35                                     | B |
| Q36                                     | C |
| Q37                                     | A |
| Q38                                     | B |
| Q39                                     | D |
| Q40                                     | B |
| Q41                                     | A |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q42                                     | B |
| Q43                                     | C |
| Q44                                     | D |
| Q45                                     | B |
| Q46                                     | A |
| Q47                                     | D |
| Q48                                     | D |
| Q49                                     | B |
| Q50                                     | D |
| Q51                                     | A |
| Q52                                     | C |
| Q53                                     | A |
| Q54                                     | C |
| Q55                                     | B |
| Q56                                     | B |
| Q57                                     | A |
| Q58                                     | B |
| Q59                                     | A |
| Q60                                     | A |
| Q61                                     | B |
| Q62                                     | B |
| Q63                                     | C |
| Q64                                     | B |
| Q65                                     | A |
| Q66                                     | A |
| Q67                                     | B |
| Q68                                     | B |
| Q69                                     | B |
| Q70                                     | C |
| Q71                                     | C |
| Q72                                     | A |
| Q73                                     | B |
| Q74                                     | C |
| Q75                                     | B |
| Q76                                     | A |
| Q77                                     | A |
| Q78                                     | C |
| Q79                                     | C |
| Q80                                     | C |
| Q81                                     | D |
| Q82                                     | A |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q83                                     | B |
| Q84                                     | A |
| Q85                                     | A |
| Q86                                     | D |
| Q87                                     | A |
| Q88                                     | A |
| Q89                                     | A |
| Q90                                     | B |
| Q91                                     | C |
| Q92                                     | B |
| Q93                                     | D |
| Q94                                     | B |
| Q95                                     | A |
| Q96                                     | C |
| Q97                                     | B |
| Q98                                     | B |
| Q99                                     | D |
| Q100                                    | A |
| Q101                                    | C |
| Q102                                    | B |
| Q103                                    | C |
| Q104                                    | A |
| Q105                                    | C |
| Q106                                    | A |
| Q107                                    | D |
| Q108                                    | A |
| Q109                                    | B |
| Q110                                    | A |
| Q111                                    | D |
| Q112                                    | B |
| Q113                                    | A |
| Q114                                    | A |
| Q115                                    | A |
| Q116                                    | D |
| Q117                                    | A |
| Q118                                    | C |
| Q119                                    | B |
| Q120                                    | B |

**Provisional Answer Key Assistant Professor (Tour & Travel)**

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q1                                      | A |
| Q2                                      | A |
| Q3                                      | D |
| Q4                                      | D |
| Q5                                      | B |
| Q6                                      | C |
| Q7                                      | C |
| Q8                                      | A |
| Q9                                      | B |
| Q10                                     | C |
| Q11                                     | B |
| Q12                                     | B |
| Q13                                     | C |
| Q14                                     | B |
| Q15                                     | A |
| Q16                                     | D |
| Q17                                     | A |
| Q18                                     | A |
| Q19                                     | B |
| Q20                                     | A |
| Q21                                     | A |
| Q22                                     | C |
| Q23                                     | C |
| Q24                                     | A |
| Q25                                     | D |
| Q26                                     | C |
| Q27                                     | D |
| Q28                                     | B |
| Q29                                     | C |
| Q30                                     | A |
| Q31                                     | A |
| Q32                                     | B |
| Q33                                     | D |
| Q34                                     | D |
| Q35                                     | A |
| Q36                                     | C |
| Q37                                     | C |
| Q38                                     | B |
| Q39                                     | D |
| Q40                                     | A |
| Q41                                     | A |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q42                                     | A |
| Q43                                     | B |
| Q44                                     | D |
| Q45                                     | D |
| Q46                                     | D |
| Q47                                     | C |
| Q48                                     | D |
| Q49                                     | A |
| Q50                                     | D |
| Q51                                     | B |
| Q52                                     | D |
| Q53                                     | B |
| Q54                                     | B |
| Q55                                     | B |
| Q56                                     | C |
| Q57                                     | D |
| Q58                                     | D |
| Q59                                     | B |
| Q60                                     | D |
| Q61                                     | A |
| Q62                                     | B |
| Q63                                     | A |
| Q64                                     | D |
| Q65                                     | A |
| Q66                                     | A |
| Q67                                     | D |
| Q68                                     | B |
| Q69                                     | C |
| Q70                                     | C |
| Q71                                     | C |
| Q72                                     | B |
| Q73                                     | A |
| Q74                                     | D |
| Q75                                     | A |
| Q76                                     | A |
| Q77                                     | A |
| Q78                                     | B |
| Q79                                     | B |
| Q80                                     | A |
| Q81                                     | D |
| Q82                                     | B |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q83                                     | D |
| Q84                                     | C |
| Q85                                     | C |
| Q86                                     | A |
| Q87                                     | A |
| Q88                                     | B |
| Q89                                     | D |
| Q90                                     | B |
| Q91                                     | D |
| Q92                                     | A |
| Q93                                     | C |
| Q94                                     | A |
| Q95                                     | C |
| Q96                                     | B |
| Q97                                     | A |
| Q98                                     | C |
| Q99                                     | B |
| Q100                                    | D |
| Q101                                    | C |
| Q102                                    | D |
| Q103                                    | C |
| Q104                                    | B |
| Q105                                    | C |
| Q106                                    | A |
| Q107                                    | C |
| Q108                                    | B |
| Q109                                    | A |
| Q110                                    | A |
| Q111                                    | A |
| Q112                                    | A |
| Q113                                    | D |
| Q114                                    | C |
| Q115                                    | D |
| Q116                                    | B |
| Q117                                    | A |
| Q118                                    | B |
| Q119                                    | C |
| Q120                                    | D |



## Provisional Answer Key Assistant Professor (Cost Accounting)

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q1                                      | A |
| Q2                                      | B |
| Q3                                      | B |
| Q4                                      | D |
| Q5                                      | D |
| Q6                                      | D |
| Q7                                      | C |
| Q8                                      | B |
| Q9                                      | C |
| Q10                                     | A |
| Q11                                     | C |
| Q12                                     | D |
| Q13                                     | A |
| Q14                                     | B |
| Q15                                     | A |
| Q16                                     | B |
| Q17                                     | D |
| Q18                                     | B |
| Q19                                     | D |
| Q20                                     | D |
| Q21                                     | B |
| Q22                                     | A |
| Q23                                     | A |
| Q24                                     | B |
| Q25                                     | A |
| Q26                                     | C |
| Q27                                     | B |
| Q28                                     | B |
| Q29                                     | B |
| Q30                                     | B |
| Q31                                     | D |
| Q32                                     | B |
| Q33                                     | B |
| Q34                                     | C |
| Q35                                     | A |
| Q36                                     | A |
| Q37                                     | C |
| Q38                                     | C |
| Q39                                     | A |
| Q40                                     | A |
| Q41                                     | C |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q42                                     | B |
| Q43                                     | A |
| Q44                                     | C |
| Q45                                     | B |
| Q46                                     | A |
| Q47                                     | C |
| Q48                                     | D |
| Q49                                     | B |
| Q50                                     | C |
| Q51                                     | A |
| Q52                                     | A |
| Q53                                     | D |
| Q54                                     | D |
| Q55                                     | B |
| Q56                                     | D |
| Q57                                     | A |
| Q58                                     | D |
| Q59                                     | A |
| Q60                                     | A |
| Q61                                     | A |
| Q62                                     | C |
| Q63                                     | D |
| Q64                                     | B |
| Q65                                     | A |
| Q66                                     | C |
| Q67                                     | C |
| Q68                                     | B |
| Q69                                     | B |
| Q70                                     | B |
| Q71                                     | A |
| Q72                                     | A |
| Q73                                     | D |
| Q74                                     | D |
| Q75                                     | B |
| Q76                                     | D |
| Q77                                     | D |
| Q78                                     | D |
| Q79                                     | B |
| Q80                                     | C |
| Q81                                     | C |
| Q82                                     | D |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q83                                     | B |
| Q84                                     | A |
| Q85                                     | D |
| Q86                                     | D |
| Q87                                     | C |
| Q88                                     | C |
| Q89                                     | A |
| Q90                                     | D |
| Q91                                     | B |
| Q92                                     | D |
| Q93                                     | C |
| Q94                                     | D |
| Q95                                     | C |
| Q96                                     | D |
| Q97                                     | C |
| Q98                                     | A |
| Q99                                     | B |
| Q100                                    | A |
| Q101                                    | D |
| Q102                                    | D |
| Q103                                    | B |
| Q104                                    | A |
| Q105                                    | C |
| Q106                                    | B |
| Q107                                    | A |
| Q108                                    | A |
| Q109                                    | A |
| Q110                                    | D |
| Q111                                    | B |
| Q112                                    | B |
| Q113                                    | C |
| Q114                                    | D |
| Q115                                    | D |
| Q116                                    | C |
| Q117                                    | C |
| Q118                                    | D |
| Q119                                    | B |
| Q120                                    | C |

### Provisional Answer Key Assistant Professor (Education)

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q1                                      | A |
| Q2                                      | A |
| Q3                                      | C |
| Q4                                      | A |
| Q5                                      | B |
| Q6                                      | B |
| Q7                                      | B |
| Q8                                      | B |
| Q9                                      | D |
| Q10                                     | C |
| Q11                                     | C |
| Q12                                     | B |
| Q13                                     | A |
| Q14                                     | D |
| Q15                                     | B |
| Q16                                     | D |
| Q17                                     | B |
| Q18                                     | C |
| Q19                                     | A |
| Q20                                     | C |
| Q21                                     | D |
| Q22                                     | C |
| Q23                                     | A |
| Q24                                     | D |
| Q25                                     | B |
| Q26                                     | C |
| Q27                                     | C |
| Q28                                     | A |
| Q29                                     | A |
| Q30                                     | A |
| Q31                                     | A |
| Q32                                     | A |
| Q33                                     | A |
| Q34                                     | B |
| Q35                                     | A |
| Q36                                     | A |
| Q37                                     | A |
| Q38                                     | A |
| Q39                                     | A |
| Q40                                     | B |
| Q41                                     | D |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q42                                     | B |
| Q43                                     | C |
| Q44                                     | B |
| Q45                                     | A |
| Q46                                     | A |
| Q47                                     | D |
| Q48                                     | D |
| Q49                                     | B |
| Q50                                     | D |
| Q51                                     | B |
| Q52                                     | C |
| Q53                                     | B |
| Q54                                     | B |
| Q55                                     | C |
| Q56                                     | A |
| Q57                                     | B |
| Q58                                     | C |
| Q59                                     | B |
| Q60                                     | C |
| Q61                                     | A |
| Q62                                     | D |
| Q63                                     | A |
| Q64                                     | B |
| Q65                                     | B |
| Q66                                     | C |
| Q67                                     | A |
| Q68                                     | D |
| Q69                                     | B |
| Q70                                     | B |
| Q71                                     | C |
| Q72                                     | C |
| Q73                                     | B |
| Q74                                     | A |
| Q75                                     | B |
| Q76                                     | D |
| Q77                                     | B |
| Q78                                     | C |
| Q79                                     | C |
| Q80                                     | A |
| Q81                                     | D |
| Q82                                     | D |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q83                                     | C |
| Q84                                     | A |
| Q85                                     | C |
| Q86                                     | C |
| Q87                                     | C |
| Q88                                     | B |
| Q89                                     | A |
| Q90                                     | B |
| Q91                                     | B |
| Q92                                     | C |
| Q93                                     | C |
| Q94                                     | B |
| Q95                                     | A |
| Q96                                     | B |
| Q97                                     | D |
| Q98                                     | B |
| Q99                                     | D |
| Q100                                    | B |
| Q101                                    | D |
| Q102                                    | D |
| Q103                                    | C |
| Q104                                    | D |
| Q105                                    | D |
| Q106                                    | A |
| Q107                                    | C |
| Q108                                    | A |
| Q109                                    | B |
| Q110                                    | D |
| Q111                                    | B |
| Q112                                    | B |
| Q113                                    | A |
| Q114                                    | B |
| Q115                                    | C |
| Q116                                    | B |
| Q117                                    | D |
| Q118                                    | A |
| Q119                                    | D |
| Q120                                    | B |

## Provisional Answer Key Assistant Professor (Horticulture Technology)

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q1                                      | B |
| Q2                                      | D |
| Q3                                      | A |
| Q4                                      | B |
| Q5                                      | B |
| Q6                                      | C |
| Q7                                      | B |
| Q8                                      | B |
| Q9                                      | B |
| Q10                                     | A |
| Q11                                     | B |
| Q12                                     | C |
| Q13                                     | B |
| Q14                                     | D |
| Q15                                     | A |
| Q16                                     | C |
| Q17                                     | B |
| Q18                                     | B |
| Q19                                     | B |
| Q20                                     | B |
| Q21                                     | D |
| Q22                                     | A |
| Q23                                     | A |
| Q24                                     | A |
| Q25                                     | C |
| Q26                                     | C |
| Q27                                     | B |
| Q28                                     | A |
| Q29                                     | B |
| Q30                                     | C |
| Q31                                     | A |
| Q32                                     | D |
| Q33                                     | B |
| Q34                                     | D |
| Q35                                     | A |
| Q36                                     | A |
| Q37                                     | D |
| Q38                                     | D |
| Q39                                     | C |
| Q40                                     | B |
| Q41                                     | D |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q42                                     | D |
| Q43                                     | C |
| Q44                                     | C |
| Q45                                     | C |
| Q46                                     | B |
| Q47                                     | D |
| Q48                                     | D |
| Q49                                     | A |
| Q50                                     | A |
| Q51                                     | B |
| Q52                                     | A |
| Q53                                     | A |
| Q54                                     | C |
| Q55                                     | B |
| Q56                                     | B |
| Q57                                     | C |
| Q58                                     | A |
| Q59                                     | B |
| Q60                                     | A |
| Q61                                     | A |
| Q62                                     | C |
| Q63                                     | D |
| Q64                                     | B |
| Q65                                     | A |
| Q66                                     | C |
| Q67                                     | A |
| Q68                                     | D |
| Q69                                     | B |
| Q70                                     | A |
| Q71                                     | B |
| Q72                                     | C |
| Q73                                     | A |
| Q74                                     | D |
| Q75                                     | C |
| Q76                                     | C |
| Q77                                     | A |
| Q78                                     | B |
| Q79                                     | B |
| Q80                                     | D |
| Q81                                     | C |
| Q82                                     | A |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q83                                     | C |
| Q84                                     | C |
| Q85                                     | A |
| Q86                                     | A |
| Q87                                     | C |
| Q88                                     | C |
| Q89                                     | B |
| Q90                                     | A |
| Q91                                     | C |
| Q92                                     | B |
| Q93                                     | D |
| Q94                                     | D |
| Q95                                     | A |
| Q96                                     | A |
| Q97                                     | D |
| Q98                                     | C |
| Q99                                     | D |
| Q100                                    | D |
| Q101                                    | A |
| Q102                                    | D |
| Q103                                    | A |
| Q104                                    | A |
| Q105                                    | B |
| Q106                                    | A |
| Q107                                    | B |
| Q108                                    | D |
| Q109                                    | C |
| Q110                                    | C |
| Q111                                    | D |
| Q112                                    | D |
| Q113                                    | B |
| Q114                                    | D |
| Q115                                    | B |
| Q116                                    | A |
| Q117                                    | A |
| Q118                                    | A |
| Q119                                    | A |
| Q120                                    | D |



# Provisional Answer Key Assistant Professor (Handloom & Handicrafts)

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q1                                      | A |
| Q2                                      | B |
| Q3                                      | B |
| Q4                                      | C |
| Q5                                      | C |
| Q6                                      | D |
| Q7                                      | B |
| Q8                                      | A |
| Q9                                      | C |
| Q10                                     | B |
| Q11                                     | C |
| Q12                                     | B |
| Q13                                     | A |
| Q14                                     | A |
| Q15                                     | C |
| Q16                                     | B |
| Q17                                     | A |
| Q18                                     | A |
| Q19                                     | A |
| Q20                                     | D |
| Q21                                     | D |
| Q22                                     | D |
| Q23                                     | A |
| Q24                                     | A |
| Q25                                     | A |
| Q26                                     | D |
| Q27                                     | B |
| Q28                                     | C |
| Q29                                     | B |
| Q30                                     | C |
| Q31                                     | C |
| Q32                                     | C |
| Q33                                     | A |
| Q34                                     | B |
| Q35                                     | A |
| Q36                                     | A |
| Q37                                     | D |
| Q38                                     | B |
| Q39                                     | C |
| Q40                                     | A |
| Q41                                     | B |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q42                                     | A |
| Q43                                     | A |
| Q44                                     | A |
| Q45                                     | A |
| Q46                                     | D |
| Q47                                     | D |
| Q48                                     | D |
| Q49                                     | A |
| Q50                                     | B |
| Q51                                     | D |
| Q52                                     | B |
| Q53                                     | C |
| Q54                                     | D |
| Q55                                     | B |
| Q56                                     | C |
| Q57                                     | A |
| Q58                                     | C |
| Q59                                     | B |
| Q60                                     | A |
| Q61                                     | B |
| Q62                                     | A |
| Q63                                     | C |
| Q64                                     | A |
| Q65                                     | A |
| Q66                                     | C |
| Q67                                     | C |
| Q68                                     | B |
| Q69                                     | A |
| Q70                                     | C |
| Q71                                     | A |
| Q72                                     | A |
| Q73                                     | A |
| Q74                                     | C |
| Q75                                     | D |
| Q76                                     | B |
| Q77                                     | C |
| Q78                                     | A |
| Q79                                     | A |
| Q80                                     | A |
| Q81                                     | D |
| Q82                                     | C |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q83                                     | A |
| Q84                                     | D |
| Q85                                     | B |
| Q86                                     | C |
| Q87                                     | B |
| Q88                                     | D |
| Q89                                     | A |
| Q90                                     | C |
| Q91                                     | B |
| Q92                                     | B |
| Q93                                     | C |
| Q94                                     | D |
| Q95                                     | A |
| Q96                                     | B |
| Q97                                     | D |
| Q98                                     | A |
| Q99                                     | C |
| Q100                                    | A |
| Q101                                    | A |
| Q102                                    | C |
| Q103                                    | C |
| Q104                                    | B |
| Q105                                    | C |
| Q106                                    | B |
| Q107                                    | C |
| Q108                                    | A |
| Q109                                    | B |
| Q110                                    | D |
| Q111                                    | A |
| Q112                                    | B |
| Q113                                    | A |
| Q114                                    | D |
| Q115                                    | B |
| Q116                                    | A |
| Q117                                    | A |
| Q118                                    | D |
| Q119                                    | C |
| Q120                                    | B |

**Provisional Answer Key Assistant Professor (Music/Music Instrumental Vocal)**

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q1                                      | D |
| Q2                                      | C |
| Q3                                      | A |
| Q4                                      | C |
| Q5                                      | B |
| Q6                                      | A |
| Q7                                      | C |
| Q8                                      | C |
| Q9                                      | D |
| Q10                                     | D |
| Q11                                     | A |
| Q12                                     | C |
| Q13                                     | A |
| Q14                                     | C |
| Q15                                     | D |
| Q16                                     | C |
| Q17                                     | D |
| Q18                                     | A |
| Q19                                     | B |
| Q20                                     | A |
| Q21                                     | B |
| Q22                                     | D |
| Q23                                     | B |
| Q24                                     | A |
| Q25                                     | C |
| Q26                                     | D |
| Q27                                     | C |
| Q28                                     | C |
| Q29                                     | C |
| Q30                                     | C |
| Q31                                     | D |
| Q32                                     | D |
| Q33                                     | A |
| Q34                                     | D |
| Q35                                     | B |
| Q36                                     | D |
| Q37                                     | C |
| Q38                                     | B |
| Q39                                     | A |
| Q40                                     | D |
| Q41                                     | B |

| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q42                                     | D |
| Q43                                     | D |
| Q44                                     | B |
| Q45                                     | B |
| Q46                                     | D |
| Q47                                     | B |
| Q48                                     | D |
| Q49                                     | D |
| Q50                                     | B |
| Q51                                     | B |
| Q52                                     | A |
| Q53                                     | C |
| Q54                                     | D |
| Q55                                     | D |
| Q56                                     | B |
| Q57                                     | C |
| Q58                                     | D |
| Q59                                     | D |
| Q60                                     | A |
| Q61                                     | B |
| Q62                                     | D |
| Q63                                     | D |
| Q64                                     | C |
| Q65                                     | C |
| Q66                                     | C |
| Q67                                     | D |
| Q68                                     | A |
| Q69                                     | C |
| Q70                                     | C |
| Q71                                     | D |
| Q72                                     | B |
| Q73                                     | C |
| Q74                                     | B |
| Q75                                     | B |
| Q76                                     | C |
| Q77                                     | B |
| Q78                                     | C |
| Q79                                     | D |
| Q80                                     | B |
| Q81                                     | D |
| Q82                                     | A |


| Test Booklet Question No.<br>(Series A) |   |
|---|---|
| Q83                                     | B |
| Q84                                     | C |
| Q85                                     | D |
| Q86                                     | A |
| Q87                                     | A |
| Q88                                     | D |
| Q89                                     | B |
| Q90                                     | B |
| Q91                                     | D |
| Q92                                     | A |
| Q93                                     | C |
| Q94                                     | D |
| Q95                                     | D |
| Q96                                     | B |
| Q97                                     | C |
| Q98                                     | C |
| Q99                                     | B |
| Q100                                    | A |
| Q101                                    | C |
| Q102                                    | D |
| Q103                                    | A |
| Q104                                    | A |
| Q105                                    | D |
| Q106                                    | A |
| Q107                                    | B |
| Q108                                    | D |
| Q109                                    | D |
| Q110                                    | D |
| Q111                                    | C |
| Q112                                    | D |
| Q113                                    | B |
| Q114                                    | D |
| Q115                                    | B |
| Q116                                    | B |
| Q117                                    | D |
| Q118                                    | B |
| Q119                                    | D |
| Q120                                    | A |

The candidates are advised to refer to **Question Booklet (Series A)** to match the corresponding question(s) in their respective Question Booklet Series and if any candidate feels that the key to any of the question(s) is/are wrong, he/she may represent on prescribed format/proforma annexed as **Annexure-A** along with the documentary proof/evidence (**hard copies only**) and fee of Rs.500/- per question in the form of Demand Draft drawn in favour of **COE, J&K PSC** (refundable in case of genuine/correct representation) to the Controller of Examinations, Jammu & Kashmir Public Service Commission, from 13.11.2023 to 14.11.2023. **The candidates are further advised to clearly mention the question(s) objected to with reference to its serial number as it appears in the Question Booklet of Series A of the provisional answer key(s).**

Further, any objection/application not accompanied by the requisite Demand Draft of Rs.500/- as prescribed, shall not be considered/entertained under any circumstances. Candidates are, in their own interest, advised to adhere to these instructions and not submit any objection unaccompanied by the Demand Draft as required under extant rules.

The Commission shall not entertain any such representation(s) after the expiry of the stipulated period i.e. **after 14.11.2023 (Tuesday), 05.00 pm.**

The provisional answer key(s) are available on the website of the Commission <http://www.jkpsc.nic.in>.

  
10.11.2023

**(G.L. Sharma), JKAS**  
Additional Secretary

 J&K Public Service Commission

Dated: 10.11.2023

No. PSC/Ex-Secy/2023/65

Copy to the: -

1. Director, Information and Public Relation, J&K for publication of the notice in all leading newspapers published from Jammu/Srinagar.
2. P.S. to Hon'ble Chairman, J&K Public Service Commission for information of the Hon'ble Chairman.
3. P.S. to Hon'ble Member, Shri \_\_\_\_\_ for information of the Hon'ble Member.
4. P. A. to Secretary, J&K Public Service Commission for information of the Secretary.
5. P.A. to Controller of Examinations, J&K Public Service Commission.
6. Main file/Stock file/Notice Board.



**Annexure-A**

Representation regarding objection(s) to any Question/Answer pertaining to the Written Test conducted for the post(s) of Assistant Professor in the disciplines of Accounting and Taxation Banking Corporation, Bioinformatics, Mathematics, Physics, Nutrition, Tour & Travel, Cost Accounting, Education, Horticulture Technology, Handloom & Handicrafts and Music/Music Instrumental Vocal, 2023 on 05.11.2023

**(NOTE: USE SEPARATE FORMS FOR SEPARATE QUESTIONS)**

Discipline : \_\_\_\_\_

Name of the Applicant : \_\_\_\_\_

Roll No. : \_\_\_\_\_

Correspondence Address : \_\_\_\_\_

Contact/Mobile No. : \_\_\_\_\_

Date of Application: \_\_\_\_\_ **.11.2023**

Demand Draft No. date : \_\_\_\_\_

Candidates Account No.(16 digit) & IFSC Code : \_\_\_\_\_

| Question No. in Series A                               | Details of the Objection | Resource Material (copy to be enclosed) | Details of the Website (if any) |
|--|--------------------------|---|---------------------------------|
|  |                          |   |                                 |
| <b><u>Correct Answer/Option as per candidate :</u></b> |                          |   |                                 |



**Signature of the Candidate**

**Note :** Application for each question/answer shall be made on separate page in the given format, otherwise the first question entered in the format shall only be considered.

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO

Booklet Serial No. **216145**

Test Booklet Series

**TEST BOOKLET  
ACCOUNTING AND TAXATION  
BANKING CORPORATION**

**A**

**Written Test - 2023**

**(29)**

*Time Allowed: Two Hours*

*Maximum Marks: 120*

**INSTRUCTIONS**

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test Booklet Series Code A, B, C or D carefully and without any omission or discrepancy at the appropriate places in the OMR Answer /Response Sheet. Any omission/discrepancy will render the Response Sheet liable for rejection.
3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside.  
*DO NOT write anything else on the Test Booklet.*
4. This Test booklet contains **120** items (questions). Each item comprises of four responses (answers). You will select the response which you want to mark on the Answer Sheet/Response Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
5. You have to mark all your responses **ONLY** on the separate Answer /Response Sheet provided. See directions in the Response Sheet.
6. All items carry equal marks.
7. Before you proceed to mark in the Answer /Response Sheet, the response to various items in the Test Booklet, you have to fill in some particulars in the Answer /Response Sheet as per instructions sent to you with your Admission Certificate.
8. After you have completed filling in all your responses on the Response Sheet and the examination has concluded, you should hand over to the Invigilator **only the Answer /Response Sheet**. You are permitted to take away with you the Test Booklet and **Candidate's Copy of the Response Sheet**.
9. Sheets for rough work are appended in the Test Booklet at the end.
10. While writing Centre, Subject and Roll No. on the top of the Answer Sheet/Response Sheet in appropriate boxes use **"ONLY BALL POINT PEN"**.
11. **Penalty for wrong answers:**  
**THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY THE CANDIDATE IN THE WRITTEN TEST (OBJECTIVE TYPE QUESTIONS PAPERS).**
  - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **(0.25)** of the marks assigned to that question will be deducted as penalty.
  - (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above for that question.
  - (iii) If a question is left blank, i.e., no answer is given by the candidate, there will be **no penalty** for that question.

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO

(29) (A)/2023

[P.T.O.]

EDM



1. The following are the sequential steps in an Accounting cycle.
  - A) Posting, Journalising, Balancing, Trial Balance, Income statement and Position statement
  - B) Journalising, Posting, Balancing, Trial Balance, Income Statement and Position statement
  - C) Journalising, Posting, Trial Balance, Income Statement, Balancing and Position Statement
  - D) None of the above
2. An account records the following:
  - A) Only amount
  - B) Amount and its impact
  - C) Amount, its impact, and direction
  - D) None of the above
3. Which of the following is an example of a capital expenditure?
  - A) Wages for the erection of machinery
  - B) Repairs of the machine after it is put to use
  - C) Insurance of a building
  - D) Legal expenses to recover dues from customers
4. Which of the following is an example of a revenue receipt?
  - A) Sale of investments
  - B) Loans raised by a company
  - C) Insurance claim for stock damaged by fire
  - D) Insurance claim for machinery damaged by fire
5. Which of the following is not the fundamental accounting assumption?
  - A) Accrual
  - B) Going Concern
  - C) Accounting Period
  - D) Consistency
6. When excessive Provisions for doubtful debts and depreciation are charged, this conflicts with which principle?
  - A) Money measurement principle
  - B) Materiality principle
  - C) Full disclosure principle
  - D) None of the above

7. Match the following:
- |   |                                |
|---|--------------------------------|
| a. Classification of assets as current assets and fixed assets                                | i. Revenue Recognition         |
| b. Appending notes to the financial statements  | ii. Industry Practice          |
| c. Valuation of the crops at market value   | iii. Full disclosure Principle |
| d. In gold mining, revenue is recognised in the accounting period in which the gold is mined. | iv. Going Concern Assumption   |

- A) a-iv; b-iii; c-i and d-ii  
 B) a-i; b-iii; c-iv and d-ii  
 C) a-iv; b-iii; c-ii and d-i  
 D) a-iii; b-ii; c-i and d-iv

8. Special Journal is also known as:

- A) Journal Proper  
 B) Subsidiary Book  
 C) None of the above  
 D) Doesn't exist

9. Which of the following serves as a journal and ledger?

- A) Purchases book  
 B) Purchases returns book  
 C) Cash Book  
 D) None of the above

10. Land as an asset is never depreciated.

- A) Agree  
 B) Disagree  
 C) Neither Agree nor disagree  
 D) Applicable for most other assets too

11. With the following extracts from a Trial Balance as of 31<sup>st</sup> March 2023, create a provision for doubtful debts @ 10% on debtors.

| Particulars      | Dr. (Rs.) |
|------------------|-----------|
| Sundry Debtors   | 2,05,000  |
| Bad Debts        | 3,000     |
| Discount Allowed | 1,800     |

- A) 20,320  
 B) 20,020  
 C) 20,200  
 D) 20,500

12. Formula to calculate the depreciation rate under the Written Down Value Method where  $S$  = Scrap value,  $C$  = asset cost, and  $n$  = asset's useful life in years.
- A)  $R = [1 - \sqrt[n]{S/C}] * 100$
  - B)  $R = [\sqrt[n]{S/C}] * 100$
  - C)  $R = [1 - \sqrt[n]{C/S}] * 100$
  - D) None of the above
13. The crucial difference between a Bill of Exchange and a Promissory Note is
- A) The issuer of a Promissory Note promises to pay, while the issuer of a Bill of Exchange normally orders payment.
  - B) A Bill of Exchange is always payable on demand, while a Promissory Note has a fixed maturity date.
  - C) Both are financial instruments with the same legal characteristics.
  - D) A Bill of Exchange is used in international transactions, while a Promissory Note is used in domestic transactions.
14. For a Promissory Note, a holder in due course means
- A) Drawer of the note
  - B) First endorser of the note
  - C) Payee of the note
  - D) Acquirer of the note for value, in good faith, and without notice of any defects
15. For a commercial transaction involving a Del Credere Commission agent, what additional responsibility does the agent typically assume compared to a regular commission agent?
- A) Assisting in product marketing and advertising.
  - B) Guaranteeing the collection of accounts receivable from customers.
  - C) Offering discounts to attract more customers.
  - D) Negotiating favourable terms with suppliers.
16. In a sale of goods on approval or return basis, the risk of loss typically transfers from the seller to the buyer upon the
- A) Delivery of the goods to the buyer
  - B) Buyer's approval of the goods
  - C) Buyer's acceptance of an invoice
  - D) Expiration of the approval period
17. A company has firstly billed Mr. P for Rs. 3,000, then Mr. Q for Rs. 4,500, and finally Ms. R for Rs. 6,200. If the Average Due Date for these invoices is calculated as 40 days, what is the total amount due on the Average Due Date?
- A) Rs. 3,000
  - B) Rs. 7,500
  - C) Rs. 13,700
  - D) Data insufficient



18. How are inter-branch transactions typically recorded under branch accounting?
- A) As income for the recipient branch
  - B) As expenses for the sending branch
  - C) As contra entries between branches
  - D) As liabilities for the head office
19. The ownership of the asset is typically transferred from the hire vendor to the hirer
- A) Immediately upon signing the agreement
  - B) After the down payment is made
  - C) Ownership never transfers in hire purchase agreements
  - D) After the final instalment is paid
20. P Ltd. has purchased a machine on hire purchase from Q Ltd. on 1<sup>st</sup> Jan, 2021 after paying Rs. 8,000 immediately and agreeing to pay three annual instalments of Rs. 8,000 each on 31<sup>st</sup> Dec. every year. The cash price of the machine is Rs. 29,800 and the vendors charge interest 5% p.a. The outstanding principal amount at the time of the payment of second instalment is
- A) Rs. 16,000
  - B) Rs. 14,890
  - C) Rs. 15,635
  - D) Data insufficient
21. In the case of the net worth method, profit under an incomplete accounting system is determined by
- A) Preparing a profit and loss account
  - B) Comparing the capital in the beginning with the capital at the end of the accounting period
  - C) Comparing the worth of assets in the beginning with the worth of assets at the end of the accounting period.
  - D) Prepare the statement of changes in equity
22. If a company takes a fire insurance of Rs. 15,000 for loss of stock worth Rs. 60,000 on the date of fire whose salvage value (residual value) is Rs. 50,000. The claim to be paid by the insurance company for the loss of stock of Rs. 10,000 with average clause is
- A) Rs. 2,500
  - B) Rs. 10,000
  - C) Rs. 15,000
  - D) Rs. 50,000
23. A hire purchaser records such asset in its book at its
- A) Hire purchase price
  - B) Amount paid to the vendor to date
  - C) Cash price
  - D) Outstanding balance amount

24. Which one of the following statements about limited liability partnerships (LLPs) as per LLP Act 2008 is incorrect?
- An LLP has a separate legal existence from its members.
  - The liability of each partner in an LLP is limited to their share in the partnership.
  - Members of an LLP are taxed as partners.
  - A limited company can be converted to an LLP.
25. The LLP formed in India becomes subject to the provisions of Partnership Act, 1932.
- Agree
  - Disagree
  - None of the above
  - It has an option to be subject to
26. In an LLP, partners Act as agents for the LLP itself but do not serve as agents for their fellow partners.
- Agree
  - Disagree
  - In some situations
  - None of the above
27. Current accounts of partners are maintained under which method?
- Fluctuating method
  - Fixed method
  - Under both the methods
  - None of the above
28. **Statement 1:** A partnership deed covers all matters relating to the mutual relationship among the partners.  
**Statement 2:** In the absence of a partnership deed, provisions of the Indian Partnership Act, 1932, shall apply for accounting purposes.
- Statement 1 is true, but statement 2 is false
  - Statement 1 is false, but statement 2 is true
  - Both statements are correct
  - None of the above
29. Where a search is initiated under section 132, the Assessing Officer shall assess or reassess the total income of
- Four assessment years immediately preceding the assessment year relevant to the previous year in which such search is conducted
  - Five assessment years immediately preceding the assessment year relevant to the previous year in which such search is conducted
  - Six assessment years immediately preceding the assessment year relevant to the previous year & beyond 6 years up to 10 years only if, income escaped for such 4 years in aggregate is more than Rs. 50 Lakh, in which such search is conducted
  - Sixteen assessment years immediately preceding the assessment year relevant to the previous year in which such search is conducted

30. On the death of a partner, the goodwill is credited to the capital account of:
- All the partners
  - All the existing partners
  - The deceased partner
  - None of the above
31. The following is true when one partnership firm is merged with another existing one.
- Both firms will do winding up entries, and one firm will make entries for the merged firm.
  - One firm will make entries like a business purchase, and the other will make entries for the winding up of a business.
  - Both A and B are correct
  - None of the above
32. Can a creditor join as a partner in case of conversion of a partnership into a company?
- Not allowed
  - Allowed up to any extent
  - Allowed up to the outstanding amount only
  - Allowed with no limits
33. In case of dissolution of a partner before the expiry of a fixed term, the partner admitted with a commitment of a certain term will
- Not be compensated for the remaining term
  - The remaining partners will return the whole goodwill paid by the partner at the time of admission
  - Will be entitled to a suitable return of the goodwill
  - All partners will decide unanimously
34. Under the Garner Vs Murray case, the deficiency of an insolvent partner will be born by the solvent partners in which ratio?
- In the Profit-sharing ratio
  - In the ratio of capital accounts
  - As per the Partnership Act, 1932
  - Both A and B
35. On 1.4.2022 Tulsi Ltd. granted 5000 Employee Stock Option Plans (ESOPs) at Rs. 30 per share, when the market value per share is Rs. 50. The options were to be exercised till 31.3.2023. The market value per share was Rs. 70 on 31.3.2023. All the options were exercised. What will be the amount of expenditure to be recorded in the statement of Profit and Loss of the company for the year ended 31.3.2023:-
- 1,50,000
  - 2,00,000
  - 1,00,000
  - Nil



36. Employee Stock Option Plan cannot be issued to:
- A) Permanent employees.
  - B) Independent director.
  - C) Managing director.
  - D) Employee of the holding company.
37. The companies are permitted to buy back their own shares out of
- A) Free reserves and Securities premium
  - B) Proceeds of the issue of any shares
  - C) Neither A nor B
  - D) Both A and B
38. Amalgamation adjustment reserve account is opened in the books of the transferee company to incorporate:
- A) Assets of the transferor company
  - B) Non-Statutory reserves of the transferor company
  - C) Statutory reserves of the transferor company
  - D) Free reserves of the transferor company.
39. According to AS-14, purchase consideration is the sum of payments made to:
- A) Shareholders and Debenture holders
  - B) Shareholders
  - C) Debenture holders
  - D) Shareholders, Debenture holders and Creditors
40. The accumulated losses under the scheme of internal reconstruction are written off against:
- A) Capital Reduction account
  - B) Share Capital account
  - C) Shareholders account
  - D) Reserve and surplus
41. Moon Ltd. is to be taken over by Sun Ltd. Moon Ltd. has 10% debentures of Rs. 100 each with a face value of Rs. 22,50,000. Debenture holders of Moon Ltd. are discharged by Sun Ltd. issuing such a number of its 12% debentures of Rs. 100 each so as to maintain the same amount of interest. The number of debentures to be issued by Sun Ltd. is:
- A) 15,000
  - B) 18,750
  - C) 22,500
  - D) 12,500

42. In case of liquidation of a company, the first item in order of payment to be made by liquidator is:
- A) Secured creditors
  - B) Debenture holders
  - C) Preference Shareholders
  - D) Liquidation expenses
43. A term loan will be treated as NPA if interest and instalment of principal amount remain overdue for a period more than:
- A) 90 days
  - B) 180 days
  - C) 270 days
  - D) 360 days
44. In the context of the accounting for banking companies, rebate on bills discounted is:
- A) Income received in advance
  - B) An item of income
  - C) A liability
  - D) Income outstanding.
45. The consolidated financial statements of the Holding company and its Subsidiary company are prepared as per:
- A) AS-11
  - B) AS-21
  - C) AS-22
  - D) AS-14
46. Pre-acquisition dividend received by the Holding company from its Subsidiary company is credited to:
- A) Profit and loss account
  - B) Capital profit
  - C) Investment account
  - D) None of the above
47. XYZ Ltd. acquired assets worth Rs. 20,00,000 from M/s Murari & Sons by issue of shares of Rs. 100 each at a premium of 25%. The number of shares issued to settle the purchase consideration will be:
- A) 16,000
  - B) 20,000
  - C) 18,000
  - D) 17,500

48. According to Table F of the Companies Act, 2013 the maximum interest that can be charged on calls-in-arrears is:
- A) 8%
  - B) 9%
  - C) 12%
  - D) 10%
49. 500 equity shares of Rs. 100 each issued at a premium of 20%, are forfeited for a final call of Rs. 40. Securities premium Rs. 20 was collected at the time of allotment money. The amount to be credited to the share forfeiture account will be:
- A) Rs. 30,000
  - B) Rs. 50,000
  - C) Rs. 60,000
  - D) Rs. 20,000
50. Profit/gain on the reissue of forfeited shares is transferred to which account:
- A) Securities premium account
  - B) Profit and loss account
  - C) Capital reserve account
  - D) None of the above
51. Trade payables as per Schedule III of the Companies Act, 2013 will include:
- A) Dues payables with respect to statutory obligation
  - B) Interest accrued on trade payables
  - C) Bills payables
  - D) All of the above
52. For companies having profits, the overall maximum limit for managerial remuneration as per Section 198 of the Companies Act, 2013 is:
- A) 11% of net profit
  - B) 10% of net profit
  - C) 12% of net profit
  - D) 5% of net profit
53. Profit prior to incorporation is:
- A) Available for distribution as dividends among the members of the company
  - B) Not available for distribution as dividend among the members of the company
  - C) Used according to what is specified in the Articles of Association of the company
  - D) Used according to what is specified in the Memorandum of Association of the company.



54. Which of the following statements is false?
- Bonus issue is made out of free reserves or securities premium collected in cash only
  - Bonus shares can be issued out of revaluation profit
  - No bonus issue shall be made within 12 months of any public or right issue
  - Company can issue bonus shares in any ratio
55. A company's shares face value is Rs. 10, book value is Rs. 20, Right issue price is Rs. 30 and market price is Rs. 40, while recording the issue of right share, the securities premium account will be credited with:
- Rs. 10
  - Rs. 20
  - Rs. 30
  - None of the above
56. XYZ Ltd. issued 2000, 12% Preference shares of Rs.100 each at par, which are redeemable at a premium of 10%. The company issued 1500 equity shares of Rs. 100 each at a premium of 20% for the purpose of redemption of preference shares. What is the amount to be transferred by the company to the Capital Redemption Reserve Account at the time of redemption of preference shares?
- 50,000
  - 2,00,000
  - 40,000
  - 70,000
57. According to Section 52 of the Companies Act, 2013, the amount in the Securities Premium Account cannot be used for the purpose of:
- Issue of fully paid bonus shares
  - Writing off losses of the company
  - Writing off preliminary expenses of the company
  - For purchase of own securities.
58. At the time of cancellation of own debentures, the account credited will be:
- Debentures account
  - Own debentures account
  - Bank account
  - None of the above
59. The cost price at which raw material is issued to the Factory will not include the adjustment for:
- Quantity Discount
  - Trade Discount
  - Cash Discount
  - All of the above

60. Labour Turnover is measured by the following method:
- A) Flux method
  - B) Halsey method
  - C) Bedaux method
  - D) Taylor method
61. Which of the following is not the method of redistribution of factory overheads to cost centres?
- A) Direct allocation
  - B) Step allocation
  - C) Reciprocal method
  - D) Reversal method
62. Cost centre is used for the following purpose:
- A) To allocate variable costs
  - B) To track primary costs
  - C) To determine fixed costs
  - D) To allocate indirect costs
63. Activity-Based Costing (ABC) is most likely to provide more accurate cost allocations in the following case:
- A) A single-product manufacturing company
  - B) A service company with one major service offering
  - C) A company with a diverse product line and varying production processes
  - D) A retail store with a fixed product assortment
64. Company A uses machine hours, and Company B uses direct labour hours as the basis for allocating factory overhead. Which company is more likely to experience distortions in product costing when automation increases?
- A) Company A
  - B) Company B
  - C) Both companies equally
  - D) Neither company
65. A company uses the high-low method to estimate its variable and fixed costs. If two points are selected for analysis, Which of the following pairs of data points should be used for greater accuracy?
- A) The lowest and highest activity levels
  - B) Two consecutive months with the most activity
  - C) Any two random months in the fiscal year
  - D) The most recent month and an ancient month

66. How does the adoption of JIT inventory systems impact carrying costs for a company?
- Carrying costs increase due to increased safety stock
  - Carrying costs decrease due to reduced inventory levels
  - Carrying costs remain unchanged
  - Carrying costs increase due to increased order quantities.
67. How are byproducts and joint products typically distinguished?
- By their relative valuation
  - By their weight and size
  - By their origin within the production process
  - By their utility in the primary product
68. What is the primary difference between cost control and cost reduction?
- Cost control aims to maintain the status quo, while cost reduction aims to enhance profitability
  - Cost control focuses on reducing costs in the short term, while cost reduction focuses on long-term cost management
  - Cost control involves monitoring and managing existing costs, while cost reduction involves finding ways to decrease costs
  - Cost control is a strategic approach, while cost reduction is a tactical approach
69. What is the primary objective of an integrated cost accounting system?
- To allocate costs to products for financial reporting purposes.
  - To integrate labour cost control with material cost control within a production facility.
  - To integrate cost and financial accounting information for better decision-making.
  - To calculate the total expenses of a company.
70. Arvind Ltd. has supplied taxable goods to Sparks Ltd. under a Reverse Charge Mechanism.  
 Date of issue of invoice: February 10, 2023  
 Date of receipt of goods by Sparks Ltd. February 15, 2023  
 Date of payment by Sparks Ltd. March 10, 2023  
 What is the time of supply of goods in the following case?
- February 15, 2023
  - March 10, 2023
  - February 10, 2023
  - March 13, 2023
71. Sunita purchases a Shoppers Stop voucher worth Rs. 2000 which can be redeemed by her to purchase any product from the store. What will be the time of supply in this case?
- Date of issue of voucher
  - Date of redemption of voucher
  - Either of the two: Date of issue of voucher or Date of redemption of voucher
  - None of the above



72. Rakesh of Tamil Nadu sells goods to Suresh of Karnataka. Before the movement of goods from Tamil Nadu, these goods are sold by Suresh to Mukesh of Kerala. On Suresh instructions, goods are dispatched by Rakesh from Tamil Nadu to Kerala. What will be the place of supply in this transaction?
- Karnataka
  - Kerala
  - Tamil Nadu
  - All of the above
73. Which of the following activity is not included in Schedule II-
- Construction of complex or any building
  - Transfer of right to use any goods
  - Services provided by an employee to the employer in the course of employment
  - Works Contract service
74. Which of the following activities are not covered under the reverse charge mechanism?
- Services provided by way of sponsorship
  - Services supplied by an arbitral tribunal
  - Services supplied by a restaurant
  - Services supplied by an insurance agent to any person carrying on business
75. Which of the following shall not be included in the computation of aggregate turnover for the purposes of Registration under GST?
- Non-taxable supplies
  - Value of CGST, SGST and IGST
  - Inward supplies covered under reverse charge mechanism
  - Both B and C
76. Every registered person who causes movement of goods of consignment value exceeding ..... in relation to supply; or reasons other than supply; or inward supply from unregistered person shall generate an e-way bill.
- 15,000
  - 20,000
  - 25,000
  - 50,000
77. What will be the time of supply in case supplier of taxable services receives an amount of upto Rs. 1000 in excess of the amount indicated in the tax invoice?
- Date of receipt of excess amount
  - Date of issue of invoice
  - At the option of the Supplier- Invoice date or date of receipt of excess amount
  - None of the above

78. Which of the following services shall be exempt from GST?
- Services by way of public conveniences such as provision of facilities of bathroom, washrooms, etc
  - Passenger transport service by radio taxi
  - Interest on fixed deposit paid by Punjab National Bank
  - Both A and C
79. Which of the following statements are true?
- Input tax credit is available only to a registered person in respect of input supplies of goods/ services which are used in the course or furtherance of business.
  - Input tax credit is available only when an original copy of invoice is available with the registered person
  - Input tax credit is available only if the registered person has received goods/ services.
  - All of the above
80. Which of the following transaction shall not be covered in Blocked credit under Section 17(5), CGST Act, 2017?
- Membership of club, health and fitness centre
  - Leave Travel Concession provided to employees
  - Raw material purchased for construction of plant and machinery
  - Outdoor catering services
81. A person covered under the Composition scheme shall issue \_\_\_\_\_ in case of supply of goods
- Receipt Voucher
  - Bill of Supply
  - A tax invoice
  - Payment Voucher
82. Which section of the Customs Act, 1962 is related to the abatement of Duty on damaged or deteriorated goods?
- Section 22 of Customs Act, 1962
  - Section 23(1) of Customs Act, 1962
  - Section 24 of Customs Act, 1962
  - Section 25 of Customs Act, 1962
83. Under section 2(22) of the Customs Act, 1962, the term "goods" includes the following:
- Baggage
  - Stores
  - Currency and Negotiable instruments
  - Vessels, aircraft and vehicles
- Choose the correct answer:**
- (i) and (ii)
  - (i), (ii) and (iii)
  - (i), (ii) and (iv)
  - (i), (ii), (iii) and (iv)

84. The Basic Custom Duty is levied under section 12 of the Customs Act and Section 2 of which of the following Acts:
- A) Customs Tariff Act, 1975
  - B) Customs Rates & Tariff Act, 1975
  - C) Customs Tariff Act, 1962
  - D) Customs Duty Act, 1962
85. The anti-dumping Duty imposed by the Government should be restricted to the lower of the two of the following:
- i) Export Price
  - ii) Normal values
  - iii) Injury Margin
  - iv) Margin of Dumping
- Choose the correct answer:**
- A) (i) and (ii)
  - B) (i) and (iii)
  - C) (ii) and (iii)
  - D) (iii) and (iv)
86. As per Rule 5 for Jewellery Allowance, for a female passenger jewellery up to \_\_\_\_ gms with a value cap of Rs. \_\_\_\_ is allowed as duty free allowance for a passenger residing abroad for more than one year.
- A) 20gms with a value cap of Rs. 50,000
  - B) 10gms with a value cap of Rs. 50,000
  - C) 30gms with a value cap of Rs. 1,00,000
  - D) 40gms with a value cap of Rs. 1,00,000
87. Mrs. A, an Indian resident who was on a visit to Dubai, returned after 4 months. She was carrying with her the following items:
- i) Personal Effect for Rs. 58,000
  - ii) Jewellery 25 grams (purchased in Dubai) for Rs. 90,000
  - iii) Music system for Rs.1,00,000
- Choose the items on which the Custom Duty is applicable:**
- A) (i) and (iii)
  - B) (i),(ii) and (iii)
  - C) (ii) and (iii)
  - D) (i) and (ii)
88. As per section 8B of the Customs Tariff Act, Safeguard Duty is levied on the
- A) Goods imported into India
  - B) Goods exported out of India
  - C) A and B
  - D) None of the above



89. For rounding off of Custom duty, interest, fine etc., the applicable section is  
 A) Section 288A  
 B) Section 288B  
 C) Section 154A  
 D) Section 170
90. For the purpose of valuation under Customs Laws, the rate specified by \_\_\_\_\_ shall be taken into account.  
 A) Central government  
 B) Central Board of Indirect Taxes and Customs (CBIC)  
 C) Respective State Government  
 D) Partly to the Central Government and partly to the respective State Government
91. Section 15 of the Customs Act 1962, specifies-  
 A) Determination of rate of duty and tariff value for export goods  
 B) Date for the determination of rate of duty and tariff value for imported goods  
 C) Mode of identifying the value of imported or exported goods  
 D) None of the above
92. Mr. A, an Indian Citizen, aged 45 years returned to India on 27-02-23. He brought the following goods with him.  
 Personal effects like clothes etc valued at 1,00,000.  
 Travel souvenirs valued at Rs.15,000.  
 One laptop worth Rs.60,000.  
 Find the amount on which customs duty is payable.  
 A) Rs. 1,75,000  
 B) Rs. 75,000  
 C) Nil  
 D) Rs. 15,000
93. The mode of providing Bilateral relief to the Indian taxpayer:  
 A) Exemption Method  
 B) Credit Method  
 C) Both A and B  
 D) None of the above
94. As per section 90(2A), the GAAR provisions of Chapter X-A shall apply to the assessee  
 A) Even if these provisions are not applicable  
 B) Even if these provisions are not beneficial  
 C) Only in a situation when these provisions are not applicable  
 D) For 10 years
95. Which of the following section/sections of the Income Tax Act, 1961 covers "Taxation of international transaction"  
 A) Section 90 to 90F  
 B) Section 91 to 91E  
 C) Section 92 to 92F

- D) None of the above
96. Which of the following is not the correct method to compute Arm's Length Price:
- Comparable uncontrolled price method
  - Resale price method
  - Cost margin method
  - Profit split method
97. Two enterprises are deemed to be associated enterprises, if at any time during the previous year, one enterprise guarantees not less than \_\_ (%) of the total borrowing of the other enterprises
- 10%
  - 12%
  - 15%
  - 26%
98. As per section 92D, assessee is not required to maintain specified information and documents, if the total value of the transaction is up to \_\_\_\_\_
- 50 Lakhs
  - 1 Crore
  - 2 Crores
  - 5 Crores
99. The rates at which the surcharge is to be payable by a Foreign company as per the Income Tax Act, 1961 is:
- 5% of such income-tax where total income exceeds Rs.10 crores.
  - Surcharge @ 2% of such income-tax, where the total income exceeds Rs. 1 crore but does not exceed Rs. 10 crores.
  - Both A and B
  - None of the above
100. Which statement is Incorrect with respect to the provisions of the Advance ruling:
- The authority for advance ruling shall consists of a chairman and such member of Vice Chairmen, revenue Members and Law members as the Central Government may by notifications appoint.
  - Authority will have all the powers of a Civil Court in respect of discovery and inspection.
  - Application for Advance Ruling should be accompanied with a demand draft of fees
  - The advance ruling shall be binding on all the assessee
101. Most countries have codified the "substance over form" in the form of \_\_\_\_\_.
- General Anti- avoidance Rule (GAAR)
  - Controlled Foreign Corporation Rule
  - Thin Capitalization Rule
  - Both B and C

102. Match the following:

- |                   |  |
|-------------------|--|
| 1. Tax avoidance  | i. Unrecorded sales                        |
| 2. Tax management | ii. Deposits in NPS                        |
| 3. Tax evasion    | iii. Compliance with the legal formalities |
| 4. Tax planning   | iv. Loopholes                              |
- A) 1-i, 2-ii, 3-iii, 4-iv  
B) 1-iv, 2-iii, 3-i, 4-ii  
C) 1-iv, 2-ii, 3-i, 4-iii  
D) 1-i, 2-iii, 3-ii, 4-iv

103. What are the various models of tax treaties/ Conventions?

- i) Organisation for Economics Corporation and Development (OECD) Model Convention
- ii) United Nations (UN) Model Convention
- iii) United Kingdom (UK) Model Convention
- iv) United States (US) Model Convention

Select the correct answer:

- A) (i), (ii) and (iii)  
B) (i), (iii), and (iv)  
C) (i), (ii) and (iv)  
D) (i), (ii), (iii) and (iv)

104. Which of the following is not eligible for deduction while computing the income from other sources?

- A) Expenses incurred to earn interest income  
B) TDS deducted on interest income  
C) Interest paid on a loan taken to earn income from other sources  
D) Gift received from a relative

105. Which of the following sections is not included in the exceptions to the rule that where income of the previous year is taxable in the immediately following assessment year:

- A) Section 171  
B) Section 172  
C) Section 174  
D) Section 175

106. Rebate under section 87A of the Income Tax Act, 1961 will be applicable:

- A) To an individual who is resident in India and whose net total income does not exceed Rs. 3,00,000  
B) To an individual who is non-resident in India and whose net total income does not exceed Rs. 5,00,000  
C) To an individual who is resident in India and whose net total income does not exceed Rs. 5,00,000  
D) To all the assessee whose total income does not exceed Rs. 5,00,000



107. In which of the following case/s, it is necessary to submit the return of loss on time to carry forward the losses:
- Loss from House Property
  - Speculation Loss
  - Short term capital loss
  - Long term capital loss
  - Non-Speculative business loss on account of unabsorbed depreciation
- Choose the correct answer:
- (i), (ii) and (iii)
  - (i), (ii), (iii) and (iv)
  - (ii), (iii) and (iv)
  - (ii), (iii) and (v)
108. For claiming deduction under section 80D, the payment of medical insurance premium should be made:
- In Cash only
  - In Cheque only
  - In Cash or Cheque
  - By any mode other than cash
109. Calculate the Gross Annual Value (GAV) based on the information given below: Municipal Valuation: Rs. 1,20,000, Fair Rent: Rs. 1,40,000, Standard Rent: Rs. 1,10,000 and the Actual Rent is Rs. 1,45,000. Which one is the correct value for GAV:
- Rs. 1,20,000
  - Rs. 1,40,000
  - Rs. 1,10,000
  - Rs. 1,45,000
110. As per section 80QBB, deduction in respect of royalty income of Authors applies to:
- Resident and Ordinary Resident
  - Resident but Not Ordinary Resident
  - Non-Resident
  - Both A and B
111. Till June 30, 2022, A was in employment with A Ltd. at a salary of Rs. 40,000 per month due on the first day of the next month date of payment is generally the 5<sup>th</sup> day of the next month. With effect from 1<sup>st</sup> July 2022, he joins B Ltd. with a salary of Rs. 50,000 due on the Last day of each month and actually paid on the 7<sup>th</sup> day of the next month. Calculate the salary income chargeable to tax for the assessment year 2023-24:
- Rs. 5,70,000
  - Rs. 5,60,000
  - Rs. 6,10,000
  - Nil

112. Which ITR form is used to file income tax returns for individuals and firms with income under the head Profit & Gains from Business and Profession?
- Form ITR-1
  - Form ITR-3
  - Form ITR-4
  - Form ITR-6
113. Which of the following statements is not true with respect to the provision of Income under the head Capital Gains:
- For Depreciable Assets, the Cost of Acquisition will be the WDV of the block at the beginning of the year and the actual cost of the assets acquired during the PY.
  - Period of holding bonus shares is not from the date of allotment of bonus shares but from the date of acquisition of original shares.
  - Conversion of debentures/ bonds of a company into shares of that company, is not considered as a transfer and hence no capital gain is chargeable to tax on conversion.
  - Transfer of capital asset(s) by a partner to his partnership firm by way of his capital contribution (or otherwise) is treated as transfer and capital gain will be taxable in the hands of the partner.
114. In case of defective return, the Assessing Officer may give the assessee an opportunity to rectify the defect within a period of how many days:
- 15 Days
  - 7 Days
  - 30 Days
  - 21 Days
115. The notice under section 143(2) must be served within:
- 12 months from the date of filing of return
  - 12 months from the due date of filing the return U/S 139(1) or from the date of filing of return of income
  - 6 months from the end of the financial year in which the return was furnished
  - 6 months from the end of the month in which the return was furnished
116. The appeal against the order of the assessing officer except in certain cases, lies with
- Central Board of Direct Taxes
  - Appellate Tribunal
  - Commissioner (Appeal)
  - Deputy Commissioner of Appeal
117. An education institution having annual receipt of \_\_\_\_\_ during the previous year, has to make an application to the prescribed authority for claiming tax exemption.
- Rs.1.20 Crore
  - Rs. 1 Crore
  - Rs. 1.5 Crore
  - Rs. 1.4 Crore

118. As per section 139A, if a person fails to comply with the provision regarding the Permanent Account number, he shall be liable to pay

- A) Rs. 10,000
- B) Rs. 5,000
- C) Rs. 2,000
- D) Rs. 1,000

119. Interest is levied from the date of grant of refund under section 143(1) till the date of

- A) Recovery of Tax
- B) Receipt of Notice
- C) Payment of tax
- D) Regular assessment

120. Match the following sections of penalty provisions with its nature of default:

- |                    |  |
|--------------------|--|
| a) Section 271(1)C | i) Failure to collect the whole or any part of the tax as required under chapter XVIIBB.   |
| b) Section 271A    | ii) Failure to furnish such report as to get account audited under section 44AB or furnish such report as it is required under section 44AB. |
| c) Section 271CA   | iii) Failure to keep or maintain or retain books of account, documents etc.  |
| d) Section 272AA   | iv) Concealment of particulars of Income or furnishing inaccurate particulars of such income   |
| e) Section 271B    | v) Failure to comply with the provisions of section 133B   |

**Choose the correct answer**

- A) a-iii, b-i, c-iv, d-v, e-ii
- B) a-iv, b-iii, c-i, d-v, e-ii
- C) a-ii, b-iv, c-iii, d-i, e-v
- D) a-i, b-ii, c-iii, d-iv, e-v



## ROUGH WORK

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**DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO**

Booklet Serial No. 216749

Test Booklet Series

**TEST BOOKLET  
BIOINFORMATICS**

**A**

**Written Test - 2023**

**(33)**

**Time Allowed: Two Hours**

**Maximum Marks: 120**

**INSTRUCTIONS**

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2. Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test Booklet Series Code A, B, C or D carefully and without any omission or discrepancy at the appropriate places in the OMR Answer /Response Sheet. Any omission/discrepancy will render the Response Sheet liable for rejection.
3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside.  
**DO NOT write anything else** on the Test Booklet.
4. This Test booklet contains **120** items (questions). Each item comprises of four responses (answers). You will select the response which you want to mark on the Answer Sheet/Response Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
5. You have to mark all your responses **ONLY** on the separate Answer /Response Sheet provided. See directions in the Response Sheet.
6. All items carry equal marks.
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8. After you have completed filling in all your responses on the Response Sheet and the examination has concluded, you should hand over to the Invigilator **only the Answer /Response Sheet**. You are permitted to take away with you the Test Booklet and **Candidate's Copy of the Response Sheet**.
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**THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY THE CANDIDATE IN THE WRITTEN TEST (OBJECTIVE TYPE QUESTIONS PAPERS).**
  - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, (0.25) of the marks assigned to that question will be deducted as penalty.
  - (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above for that question.
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(33) (A)/2023

[P.T.O.]

File



1. Which of the following best describes the primary role of enzymes in biochemical reactions?
  - A) Inhibiting reactions
  - B) Slowing down reactions
  - C) Increasing reaction rates
  - D) Inhibiting substrates
  
2. What is the primary function of chaperones in the cell?
  - A) Catalyzing metabolic reactions
  - B) Assisting in protein folding
  - C) Regulating gene expression
  - D) Storing genetic information
  
3. In glycolysis, which enzyme catalyzes the conversion of glucose-6-phosphate to fructose-6-phosphate?
  - A) Hexokinase
  - B) Phosphofructokinase
  - C) Aldolase
  - D) Isomerase
  
4. Which coenzyme is essential for transferring acetyl groups in various biochemical reactions, such as the citric acid cycle?
  - A) AIP
  - B) NAD<sup>+</sup>
  - C) FAD
  - D) CoA
  
5. In DNA replication, which enzyme is responsible for unwinding the DNA double helix?
  - A) DNA polymerase
  - B) DNA ligase
  - C) Helicase
  - D) Topoisomerase
  
6. What is the role of RNA polymerase in transcription?
  - A) Synthesizing mRNA from DNA
  - B) Synthesizing DNA from mRNA
  - C) Repairing DNA damage
  - D) Translating mRNA into protein

7. Which of the following amino acids is essential and must be obtained through the diet?
- A) Alanine
  - B) Serine
  - C) Valine
  - D) Aspartate
8. In which cellular organelle does oxidative phosphorylation occur?
- A) Nucleus
  - B) Endoplasmic reticulum
  - C) Mitochondrion
  - D) Golgi apparatus
9. Which of the following is a left-handed helix?
- A) A form
  - B) B form
  - C) Z form
  - D) None of the above
10. What is the primary function of lipoproteins in the body?
- A) Storing carbohydrates
  - B) Transporting lipids in the blood
  - C) Digesting proteins
  - D) Regulating blood glucose levels
11. Which of the following vitamins is fat-soluble and important for vision?
- A) Vitamin C
  - B) Vitamin D
  - C) Vitamin K
  - D) Vitamin A
12. What is the role of reverse transcriptase in the replication of retroviruses like HIV?
- A) Synthesizing RNA from DNA
  - B) Synthesizing DNA from RNA
  - C) Repairing damaged DNA
  - D) Inhibiting protein synthesis

13. Which of the following is a purine base found in DNA?
- A) Adenine
  - B) Cytosine
  - C) Uracil
  - D) Guanine
14. What is the primary function of DNA ligase in DNA replication?
- A) Unwinding the double helix
  - B) Synthesizing DNA from RNA
  - C) Joining Okazaki fragments on the lagging strand
  - D) Proofreading DNA sequences
15. Which of the following has four polypeptide subunits: two identical alpha chains and two identical beta chains, all held together by noncovalent interactions?
- A) Human serum albumin
  - B) Hemoglobin
  - C) Insulin
  - D) None of the above
16. Supersecondary structures are also called:
- A) Primary structures
  - B) Quaternary structures
  - C) Motifs
  - D) Unfolded structures
17. Which type of chemical bond holds together the two strands of the DNA double helix?
- A) Covalent bond
  - B) Hydrogen bond
  - C) Ionic bond
  - D) Disulfide bond
18. Which of the following is a function of the Golgi apparatus in the cell?
- A) Vitamin C synthesis
  - B) DNA Replication
  - C) Protein modification and sorting
  - D) ATP production



19. What is the primary function of transfer RNA (tRNA) in protein synthesis?

- A) Synthesizing mRNA
- B) Carrying amino acids to the ribosome
- C) Catalyzing peptide bond formation
- D) Proofreading DNA sequences

20. Which of the following is a property of enzymes?

- A) They are consumed in chemical reactions
- B) They increase the activation energy of reactions
- C) They alter the equilibrium of reactions
- D) They are highly specific for particular substrates.

21. What is the binary equivalent of the decimal number 42?

- A) 101010
- B) 101011
- C) 110110
- D) 111100

22. Match the two columns

**Column I: Bioinformatics**

**Tools/Concepts**

- 1. BLAST
- 2. Hidden Markov Models (HMM)
- 3. Multiple Sequence Alignment
- 4. GenBank

**Column II: Description/Function**

- a) Database of nucleotide sequences and their protein translations
- b) Sequence alignment algorithm for similarity search and calculates the statistical significance
- c) Probabilistic model for sequence analysis
- d) Method for aligning sequences to generate evolutionary relationships between the sequences

**Options:**

- A) 1-a, 2-b, 3-d, 4-c
- B) 1-b, 2-c, 3-d, 4-a
- C) 1-d, 2-a, 3-c, 4-b
- D) 1-c, 2-d, 3-b, 4-a

23. Match the following columns -

**Column I: Bioinformatics Databases**

1. UniProt
2. NCBI Gene
3. Ensembl
4. PDB (Protein Data Bank)

**Column II: Description/Content**

- a) Repository of protein sequences and functional information
- b) Collection of 3D structural data for proteins and macromolecules
- c) Comprehensive resource for genomic data and annotations
- d) Genome browser for supporting research in comparative genomics, evolution, sequence variation and transcriptional regulation.

**Options:**

- A) 1-c, 2-d, 3-a, 4-b
- B) 1-b, 2-a, 3-c, 4-d
- C) 1-a, 2-c, 3-d, 4-b
- D) 1-d, 2-b, 3-a, 4-c

24. Match the following columns -

**Column I: Bioinformatics Applications**

1. Phylogenetic Analysis
2. Structural Bioinformatics
3. Metagenomics
4. Functional Annotation

**Column II: Description/Function**

- a) Determining the evolutionary relationships among species
- b) Analyzing and predicting protein structures
- c) Studying microbial communities in environmental samples
- d) Assigning biological functions to genes and proteins

**Options:**

- A) 1-b, 2-a, 3-c, 4-d
- B) 1-a, 2-b, 3-c, 4-d
- C) 1-d, 2-b, 3-c, 4-a
- D) 1-a, 2-b, 3-d, 4-c

25. Which of the following biotechnological products have significant ethical implications?

- i. Genetically modified crops
  - ii. Vaccines
  - iii. Antibiotics
  - iv. Cloning
  - v. Monoclonal antibodies
- A) i, ii, iii
  - B) i, ii, iv
  - C) i, iii, iv
  - D) i, iv, v

26. What does the acronym "www" stand for in the context of the internet?
- A) World Wide Web
  - B) Wireless Web Workbench
  - C) World of Widespread Websites
  - D) Wired Web Window
27. What is the result of multiplying a square matrix by its inverse?
- A) The identity matrix
  - B) Zero matrix
  - C) A matrix with determinant 1
  - D) A matrix with determinant -1
28. In probability distribution, what does the term "symmetry" refer to?
- A) The shape of the probability curve
  - B) The mean, median, and mode being equal
  - C) The presence of outliers in the data
  - D) The dispersion of data values
29. Which cellular organelle is responsible for the synthesis of lipids and detoxification of drugs and poisons?
- A) Golgi complex
  - B) Endoplasmic reticulum
  - C) Lysosome
  - D) Mitochondria
30. In the eukaryotic cell cycle, during which phase does DNA replication occur?
- A) G1 phase
  - B) S phase
  - C) G2 phase
  - D) M phase



31. Which cellular component is responsible for maintaining cell shape and facilitating cell movement?
- A) Golgi complex
  - B) Microtubules
  - C) Endoplasmic reticulum
  - D) Lysosome
32. What is the primary function of the nuclear pore complex?
- A) DNA replication
  - B) Protein synthesis
  - C) Regulation of gene expression
  - D) Regulating the transport of proteins and RNA across the nuclear envelope
33. Which organelle is involved in the synthesis of ATP through oxidative metabolism?
- A) Golgi complex
  - B) Endoplasmic reticulum
  - C) Mitochondrion
  - D) Lysosome
34. In photosynthetic metabolism, what process involves the absorption of light and conversion of light energy into chemical energy?
- A) Photophosphorylation
  - B) Carbon dioxide fixation
  - C) Photosynthetic units
  - D) Chromatin synthesis
35. Which molecule serves as the template for protein synthesis during translation?
- A) DNA
  - B) tRNA
  - C) rRNA
  - D) mRNA
36. What is the primary function of peroxisomes within a cell?
- A) Lipid synthesis
  - B) Protein synthesis
  - C) Detoxification reactions
  - D) ATP production
37. In DNA sequencing, which method relies on the use of chain-terminating nucleotide analogs?
- A) Sanger sequencing
  - B) CRISPR-Cas9
  - C) Next-generation sequencing
  - D) None of the above

38. What type of molecule is characterized by a long hydrocarbon chain with a carboxyl group at one end?
- A) Amino acid
  - B) Ribonucleic acid
  - C) Fatty acid
  - D) Steroid
39. In nucleotide synthesis, which pathway involves the utilization of pre-formed bases and nucleosides to build new nucleotides?
- A) Neural pathway
  - B) Salvage pathway
  - C) Oxidative pathway
  - D) Reduction pathway
40. What is the central dogma of molecular biology?
- A) DNA replication → Transcription → Translation
  - B) Transcription → DNA replication → Translation
  - C) Translation → Transcription → DNA replication
  - D) Translation → DNA replication → Transcription
41. Which sequence file format is known for its simple and widely accepted representation of sequence data with a single-letter amino acid or nucleotide code?
- A) GenScan
  - B) EMBL
  - C) BLAST
  - D) FASTA
42. What is the primary purpose of literature databases like PubMed and Medline in bioinformatics?
- A) Storing protein structures
  - B) Providing information on molecular pathways
  - C) Cataloging scientific articles / publications
  - D) Analyzing genomic sequences
43. Which of the following is a primary sequence database for nucleic acids and proteins that is maintained by the National Center for Biotechnology Information (NCBI)?
- A) EMBL
  - B) Swiss-Prot
  - C) DDBI
  - D) GenBank

44. What is the primary purpose of secondary structure databases like SCOP and CATH?
- A) Storing protein sequences
  - B) Annotating gene expression data
  - C) Classifying protein structures into hierarchies
  - D) Cataloging chemical compounds
45. What parameter in BLAST indicates the expected number of false positives in a search, taking into account the database size and scoring statistics?
- A) Identity score
  - B) Homology threshold
  - C) E-value
  - D) Bit score
46. In bioinformatics, what are specialized databases like EST, STS, and GSS primarily focused on?
- A) Structural data of proteins
  - B) Genomic sequences
  - C) DNA thermodynamic properties
  - D) Chemical structures
47. Which tree structure ensures that the left subtree contains only nodes with values less than the root node, and the right subtree contains only nodes with values greater than the root node?
- A) General tree
  - B) AVL tree
  - C) B-tree
  - D) Binary search tree (BST)
48. What type of loop in C allows you to execute a block of code at least once before checking the loop condition?
- A) for loop
  - B) while loop
  - C) do-while loop
  - D) if-else loop
49. What is the term for a function that calls itself within its own definition?
- A) Recursive function
  - B) Inline function
  - C) Destructor
  - D) Constructor



50. In genomics, what does SNP analysis primarily focus on?
- A) Protein sequencing
  - B) DNA replication
  - C) Genetic variation at single nucleotide positions
  - D) RNA splicing
51. Which enzyme catalyzes the changes in the linking number of DNA?
- A) Topoisomerases
  - B) Oxidoreductases
  - C) Secretases
  - D) None of the above
52. Which method is commonly used for protein sequencing to determine the amino acid sequence of a protein?
- A) Mass spectrometry
  - B) Circular dichroism
  - C) NMR spectroscopy
  - D) X-ray crystallography
53. Which spectroscopic technique is commonly used to study protein secondary structure?
- A) Fluorescence spectroscopy
  - B) NMR spectroscopy
  - C) X-ray crystallography
  - D) Circular dichroism spectroscopy
54. Riboflavin is also known as
- A) Vitamin C
  - B) Vitamin B<sub>2</sub>
  - C) Vitamin B<sub>1</sub>
  - D) Vitamin B<sub>6</sub>
55. What is the purpose of indexing in a database system?
- A) To reduce storage space
  - B) To organize data into tables
  - C) To improve data retrieval performance
  - D) To enforce data integrity

56. In a binary search tree (BST), which traversal would result in a sorted sequence?
- A) Preorder
  - B) Inorder
  - C) Postorder
  - D) Level order
57. What is the main advantage of using a circular queue over a regular queue?
- A) Circular queues have better memory utilization
  - B) Circular queues can hold an unlimited number of elements
  - C) Circular queues allow elements to be inserted at any position
  - D) Circular queues are simpler to implement
58. In data structures, what does the term "deque" stand for?
- A) Double-ended queue
  - B) Data query engine
  - C) Directory query engine
  - D) Data encoding
59. Which algorithm is commonly used to find local alignments between two biological sequences?
- A) Needleman-Wunsch
  - B) Smith-Waterman
  - C) Dynamic Programming
  - D) RCSB
60. Which scoring matrix does BLAST use?
- A) Inverse matrix
  - B) BLOSUM 62
  - C) Hamming matrix
  - D) None of the above

61. Which tool is commonly used for searching protein databases using profile Hidden Markov Models (HMMs)?
- A) BLAST
  - B) FASTA
  - C) HMMER
  - D) Clustal W
62. In gene prediction, what does the term "ORF" stand for?
- A) Open Reading Frame
  - B) Original Reading Frame
  - C) Orthogonal Reading Frame
  - D) Organism Reference Frame
63. In the context of sequence analysis, what is the primary goal of constructing a dendrogram?
- A) To calculate sequence entropy
  - B) To find hidden Markov models
  - C) To visualize hierarchical clustering
  - D) To identify sequence motifs
64. Which database provides information on protein folds and their classification?
- A) NCBI
  - B) SCOP
  - C) PDB
  - D) CASP
65. What does RMSD (Root Mean Square Deviation) measure in structural biology?
- A) Protein secondary structure
  - B) Structural alignment quality
  - C) Energy minimization
  - D) Protein-ligand interactions
66. In the context of computational biology, what does PME stand for?
- A) Protein Modeling Engine
  - B) Potential Molecular Energy
  - C) Particle Mesh Ewald
  - D) Protein-Membrane Interaction
67. In the context of MD simulations, what does the term "ensemble" refer to?
- A) A group of molecules in a simulation
  - B) The collection of trajectory snapshots
  - C) A set of initial conditions for simulations
  - D) A thermodynamic state defined by its properties like temperature and pressure



68. Which ensemble is commonly used in molecular dynamics simulations to maintain a constant number of particles, volume, and energy?
- A) NVE
  - B) NVT
  - C) NPT
  - D) NEPT
69. Which R package is commonly used for bioinformatics applications and provides tools that facilitates rigorous and reproducible analysis of data from current and emerging biological assays?
- A) dplyr
  - B) ggplot2
  - C) Bioconductor
  - D) Shiny
70. What does SQL stand for in the context of databases?
- A) Structured Query Language
  - B) Standard Query Language
  - C) System Query Language
  - D) Sequential Query Language
71. What is the primary role of epigenomics in biology?
- A) Studying the genetics of extinct species
  - B) Analyzing the effects of temperature on gene expression
  - C) Investigating modifications to DNA that affect gene regulation
  - D) Understanding the 3D structure of proteins
72. What does ChIP-Seq stand for in epigenomics?
- A) Chromosome Identification Profile - Sequencing
  - B) Chromatin ImmunoPrecipitation - Sequencing
  - C) Chromosomal Inversion Pattern - Sequencing
  - D) Chromosome Interaction Protocol - Sequencing
73. Which of the following is NOT considered a biosignal source?
- A) Electrocardiogram
  - B) Electroencephalogram
  - C) X-ray
  - D) Electromyogram
74. In chemoinformatics, what is SMILES used for?
- A) Representing chemical structures
  - B) Predicting protein structures
  - C) Creating molecular dynamics simulations
  - D) Analyzing gene expression data

75. What does the term "GMP" stand for in pharmaceutical manufacturing?
- A) Good Molecular Practices
  - B) General Manufacturing Process
  - C) Good Manufacturing Practices
  - D) General Molecular Protocols
76. Which NGS platform is known for utilizing the principle of detection of hydrogen ion release during incorporation of new nucleotide in the growing DNA template?
- A) Illumina
  - B) Pacific Biosciences SMRT
  - C) Ion Torrent
  - D) ONT Nanopore
77. What does CNV stand for in the context of genomic variation discovery?
- A) Common Nucleotide Variation
  - B) Copy Number Variation
  - C) Chromosomal Nucleotide Variation
  - D) Complementary Nucleotide Variation
78. What genetic concept explains the inheritance of discrete traits like eye color in humans?
- A) Profile
  - B) Quantitative traits
  - C) Mendelian traits
  - D) Epigenetic modifications
79. In genetic linkage analysis, what does a high LOD (logarithm of odds) score indicate?
- A) Strong genetic linkage
  - B) No genetic linkage
  - C) Negative correlation
  - D) Epigenetic modifications
80. Which of the following techniques are commonly used in the study of biomolecular structures at the nanoscale?
- i. Atomic Force Microscopy
  - ii. Transmission Electron Microscopy
  - iii. Gas Chromatography
  - iv. Ion Exchange Chromatography
- A) i and ii
  - B) i and iv
  - C) iii and iv
  - D) ii and iii

81. Which of the following terms refers to the computational method in molecular modelling that uses equations obeying the laws of classical physics?
- A) Quantum mechanics
  - B) Molecular calculations
  - C) Molecular mechanics
  - D) Quantum theory
82. Which of the following statements is true?
- A) Energy minimisation is carried out only using quantum mechanics.
  - B) Energy minimisation is used to find a stable conformation for a molecule.
  - C) Energy minimisation is carried out by varying only bond angles and bond lengths.
  - D) Energy minimisation always stops when a structure is formed with a much greater stability than the previous one in the process.
83. Which of the following statements is true?
- A) The most stable conformation of a drug is also the active conformation.
  - B) The active conformation is the most reactive conformation of a structure.
  - C) The active conformation is the conformation adopted by a drug when it binds to its target binding site.
  - D) The active conformation can be determined by conformational analysis.
84. Which of the following operations or calculations would generally be carried out using molecular mechanics?
- A) Molecular orbital energies
  - B) Energy minimisation
  - C) Electrostatic potentials
  - D) Transition-state geometries
85. What are the variables that describe the macrostate of a system in canonical ensemble?
- A)  $U, V, N$
  - B)  $S, V, N$
  - C)  $T, V, \mu$
  - D)  $T, V, N$



86. Which of the following statement is NOT correct?
- A) Desolvation is an energy expensive process that involves the removal of water from polar functional groups prior to a drug binding to its binding site.
  - B) Water molecules surrounding a hydrophobic region of a drug form an ordered layer of molecules with low entropy.
  - C) Interaction between the non-polar regions of a drug and the non-polar regions of a target require the removal of an ordered water coat and represents a gain in binding energy due to increased entropy.
  - D) An increase in entropy results in a greater positive value of  $\Delta G$  and a greater chance of binding.
87. The degrees of freedom in protein-ligand docking involve
- A) Only translational
  - B) Only rotational
  - C) Both translational and rotational
  - D) Rotational, translational and solvent
88. Force field based scoring depends on
- A) Only bonded interactions
  - B) Only Electrostatic interactions
  - C) Only van der Waals interactions
  - D) Bonded, Electrostatic and van der Waals interactions
89. Which of the following is a small molecule database?
- A) PDB
  - B) SCOP
  - C) GOLD
  - D) ZINC
90. Which of the following statement best describes pharmacodynamics?
- A) The study of how drugs reach their target in the body and how the levels of a drug in the blood are affected by absorption, distribution, metabolism and excretion.
  - B) The study of how drugs can be designed using molecular modelling based on a drug's pharmacophore.
  - C) The study of how a drug interacts with its target binding site at the molecular level.
  - D) The study of which functional groups are important in binding a drug to its target binding site and the identification of a pharmacophore.

91. Which of the following statements best describes the tool GOR?
- A tool for phylogeny
  - A tool for transmembrane structure prediction
  - A tool for prediction of genes
  - A tool for secondary structure prediction for proteins
92. Which of the following is one of the rules in Lipinski's rule of five?
- A molecular weight greater than 500 daltons
  - More than five hydrogen bond acceptor groups
  - More than 10 hydrogen bond donor groups
  - A calculated logP (octanol-water partition coefficient) value less than +5
93. Which of the following is NOT used as a measure of enzyme activity?
- EC50
  - Ki
  - IC50
  - LogP
94. Which is not a pharmacophore in this list
- Aromatic rings
  - Rotatable bonds
  - Hydrogen bond donor and acceptor
  - Hydrophobic centroids
95. QSAR is based on the notion that
- Activity is a function of aromatic rings in a molecule
  - Activity is a function of molecular properties
  - Activity is a function of physical properties
  - Activity is a function of optical properties
96. Which of the following is untrue about homology modeling?
- Homology modeling predicts protein structures based on sequence homology with known structures
  - It is also known as comparative modeling
  - It involves the prediction of evolutionary distances
  - The principle behind it is that if two proteins share a high enough sequence similarity, they are likely to have very similar three-dimensional structures
97. Which of the following are known as protein helix breakers?
- Proline and glycine
  - Isoleucine and leucine
  - Valine
  - Threonine
98. Protein Secondary structure is primarily defined by
- Hydrogen bonding
  - Vander Waals forces
  - Covalent bonding
  - Ionic bonding
99. Which of the following statements is true about a peptide bond (R-CONH-R')?
- It is non-planar
  - It is capable of forming a hydrogen bond
  - The cis configuration is favoured over the trans configuration
  - Single bond rotation is permitted between nitrogen and the carbonyl group

100. Which of the following statements is NOT correct about protein secondary structure?
- A) The alpha helix, beta pleated sheet and beta turns are examples of protein secondary structure.
  - B) The ability of peptide bonds to form intramolecular hydrogen bonds is important to secondary structure.
  - C) The steric influence of amino acid residues is important to secondary structure.
  - D) The hydrophilic/hydrophobic character of amino acid residues is important to secondary structure.
101. Identify the strongest form of intermolecular bonding that could be formed involving glutamic acid
- A) Ionic bond
  - B) Hydrogen bond
  - C) Van der Waals interactions
  - D) Cation pi interaction
102. In a protein, if alanine is mutated to lysine in the vicinity of glutamic acid, what will happen to the stability?
- A) Increase
  - B) Decrease
  - C) Remain the same
  - D) Not able to predict
103. Which of the following statements about a plot of  $V_0$  vs.  $[S]$  for an enzyme that follows Michaelis-Menten kinetics is false?
- A)  $K_m$  is the  $[S]$  at which  $V_0 = \frac{1}{2} V_{max}$ .
  - B) The shape of the curve is a hyperbola.
  - C) As  $[S]$  increases, the initial velocity of reaction,  $V_0$ , also increases.
  - D) At very high  $[S]$ , the velocity curve becomes a horizontal line that intersects the y-axis at  $K_m$ .
104. Betweenness centrality is a characteristic of a \_\_\_\_\_ and is a measure of \_\_\_\_\_
- A) Node, how connected the neighbours are
  - B) Network, number of shortest paths passing through a node
  - C) Node, number of connection each node has
  - D) Network, fraction of edges between nodes of different types
105. Protein-protein interaction networks are most commonly modelled as
- A) Undirected graphs
  - B) Hypergraphs
  - C) Directed graphs
  - D) Cyclic graphs
106. Which of the following gene networks are directed graphs?
- A) Gene-regulatory networks
  - B) Co-expression networks
  - C) Gene interaction networks
  - D) Gene expression network



107. Which of the following statements is correct?
- A) Motifs are recurring patterns in networks that occur less frequently than at random
  - B) The number of connections within modules is much larger than the number of connections between modules
  - C) Most biological systems do not exhibit modularity
  - D) Motifs in a network can be independent
108. Genetic algorithms involve which of the following phenomena?
- A) Mutation
  - B) Cross over
  - C) Selection
  - D) All of the above
109. Which of the following is NOT correct about DNA sequencing?
- A) It is now routinely carried out using the Sanger method
  - B) This doesn't make use of DNA polymerases
  - C) This involves synthesis of DNA chains of varying length
  - D) The DNA synthesis is stopped by adding dideoxynucleotides
110. Which of the following is NOT correct about *ab-initio* protein structure prediction?
- A) The limited knowledge of protein folding forms the basis of *ab-initio* prediction
  - B) The *ab-initio* prediction method attempts to produce all-atom protein models based on sequence information alone without the aid of known protein structures
  - C) The *ab-initio* prediction method attempts to produce all-atom protein models based on sequence information alone with some aid of known protein structures
  - D) The perceived advantage of *ab-initio* method is that predictions are not restricted by known folds and that novel protein folds can be identified
111. Which of the following is NOT correct about PDB?
- A) It is a database for protein structures
  - B) It is a primary database
  - C) It maintains structures deposited both by experimental techniques and theoretically computed models
  - D) The database is not free
112. Which of the following is NOT correct regarding Automated Genome Annotation?
- A) It exists because of the need to develop fast and automated methods to annotate the genomic sequences
  - B) The automated approach relies on homology detection
  - C) The automated approach doesn't rely on heuristic sequence similarity searching
  - D) Automation brings speed in gene annotation process
113. Gibbs sampling for motif discovery can be used for what type of sequences?
- A) Closely related sequences
  - B) Distinctly related sequences
  - C) Distinctly related sequences that share common motifs
  - D) Closely related sequences that share common motifs

114. BLAST uses a \_\_\_\_\_ to find matching words, whereas FASTA identifies identical matching words using the \_\_\_\_\_
- Substitution matrix, hashing procedure
  - Substitution matrix, blocks
  - Hashing procedure, substitution matrix
  - Ktups, substitution matrix
115. Which of the following is NOT correct about ab-initio based programs for Gene Prediction?
- The goal of the ab-initio gene prediction programs is to discriminate exons from noncoding sequences
  - The goal is joining exons together in the correct order
  - The main difficulty is correct identification of exons
  - To predict exons, the algorithms rely solely on gene signals
116. Which of the following does not describe dynamic programming?
- The approach compares every pair of characters in the two sequences and generates an alignment, which is the best or optimal
  - Global alignment algorithm is based on this method
  - Local alignment algorithm is based on this method
  - The method can be useful in aligning protein sequences to protein sequences only
117. In BLOSUM62, what does the number 62 signify?
- 62 sequences were used for alignment
  - The sequences used to build the matrix have approximately 62% similarity
  - The sequences used to build the matrix have approximately 62% identity
  - It is an arbitrary number given by the author(s)
118. Which of the following is NOT correct about the  $\beta$ -sheet?
- A  $\beta$ -sheet is a fully extended configuration built up from several spatially adjacent regions of a polypeptide chain
  - Each region involved in forming the  $\beta$ -sheet is a  $\beta$ -strand
  - The  $\beta$ -strand conformation is pleated with main chain backbone zig-zagging and side chains positioned always on same sides of the sheet
  - $\beta$ -Strands are stabilized by hydrogen bonds between residues of adjacent strands
119. Which of the following are variants of BLAST ?
- |           |           |
|-----------|-----------|
| A) BLASTa | B) BLASTn |
| C) BLASTx | D) BLASTp |
120. Which of the following is NOT correct about PHYLIP?
- PHYLIP is a free package of programs for inferring phylogenies
  - PHYLIP is helpful in construction of phylogenetic trees
  - The package include parsimony, distance matrix, and likelihood methods, including bootstrapping and consensus trees
  - PHYLIP stands for PHYLogeny Inheritance Protein server

## ROUGH WORK



## ROUGH WORK

AL

Booklet Serial No. **218913**

Test Booklet Series

**TEST BOOKLET  
MATHEMATICS  
Written Test - 2023  
(58)**

**A**

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1. Which of the following is NOT a property of the Well-Ordering Principle for  $\mathbb{N}$ ?
  - A) Every nonempty subset of  $\mathbb{N}$  has a least element.
  - B) The set  $\mathbb{N}$  itself has a least element.
  - C) Every nonempty subset of  $\mathbb{N}$  has a greatest element.
  - D) The Well-Ordering Principle is equivalent to the Principle of Mathematical Induction.
  
2. The total number of normal subgroups of the Klein's 4 group is :
  - A) 1
  - B) 3
  - C) 4
  - D) 5
  
3. **Assertion (A) :** A  $3 \times 3$  matrix such that  $P^3 = P$  has eigen values 1, 2, -1  
**Reasoning (R) :** The Cayley - Hamilton theorem states that substituting the matrix A for x in the polynomial  $p(x) = \det(A - xI_n)$  results in zero matrices.  
 Choose the correct option :
  - A) Both A and R are true and R is a correct explanation of A.
  - B) Both A and R are true but R is not a correct explanation of A.
  - C) A is true but R is false.
  - D) A is false but R is true.
  
4. The value of k that makes the complex - valued function  $f(z) = (3 + ki)z + (2 - i)\bar{z}$  analytic is:
  - A)  $k=2$
  - B)  $k = -2$
  - C)  $k = 1$
  - D) No such k exists.
  
5. Which of the following is not compact?
  - A) A finite set in any metric space.
  - B) A closed interval in  $\mathbb{R}$ .
  - C) A torus in  $\mathbb{R}^3$
  - D)  $(0,2) \cup (3,5)$  with the standard topology induced on the real line.

6. Which of the following is true about primes?
- A) Product of twin primes is always a perfect square
  - B) Sum of twin primes  $p$  and  $p+2$  is divisible by 12 provided  $p > 5$
  - C) The only pair of primes satisfying  $p-q = 3$  are 5 and 2.
  - D) 1009 and 1011 are twin primes.
7. Let  $V$  be a normed space over  $\mathbb{R}$  with norm  $\|\cdot\|$ . If  $x \in V$  and  $\alpha \in \mathbb{R}$  is a scalar, which of the following statements is incorrect regarding the defining properties of a norm?
- A)  $\|\alpha x\| = |\alpha| \cdot \|x\|$
  - B)  $\|x\| \geq 0$
  - C)  $\|x\| = 0$  if and only if  $x=0$ .
  - D)  $\|x + y\| \geq \|x\| + \|y\|$
8. The order of the element  $12 + \langle 8 \rangle$  in the factor group  $\mathbb{Z}_{24} / \langle 8 \rangle$  is :
- A) 1
  - B) 2
  - C) 4
  - D) 6
9. If  $f(x)$  is a quadratic function on  $[-2, 2]$ , then the value of  $c$  for  $c \in (-2, 2)$  such that  $4f'(c) + f(-2) = f(2)$  implies :
- A) any  $c$
  - B)  $c = -1$
  - C)  $c = 0$
  - D)  $c = -1$

10. Let  $P_2$  be the vector space of polynomials of degree at most 2. Let  $B = \{1, x, 1+x^2\}$  be the basis. Then the matrix corresponding to the polynomial  $p(x) = 1 - x^2$  with respect to the basis  $B$  is given by:

- A)  $\begin{bmatrix} 2 & 0 & -1 \end{bmatrix}$  B)  $\begin{bmatrix} 1 & 0 & -1 \end{bmatrix}$   
 C)  $\begin{bmatrix} 2 & 1 & -1 \end{bmatrix}$  D)  $\begin{bmatrix} 1 & -1 & 1 \end{bmatrix}$

11. Assertion (A) :  $1260 = 2^2 \cdot 3^2 \cdot 5 \cdot 7$  and  $29400 = 2^3 \cdot 3 \cdot 5^2 \cdot 7^2$  and so

$$\gcd(1260, 29400) = 2^2 \cdot 3 \cdot 5 \cdot 7 = 420$$

Reason (R) : By the Fundamental theorem of Arithmetic, if  $a = p_1^{k_1} p_2^{k_2} \cdots p_n^{k_n}$  and  $b = p_1^{j_1} p_2^{j_2} \cdots p_n^{j_n}$ . Then  $\gcd(a, b) = p_1^{r_1} p_2^{r_2} \cdots p_n^{r_n}$ , where  $r = \min(k_i, j_i)$

- A) Both A and R are correct and R is the correct explanation of A  
 B) Both A and R are correct but R is not the correct explanation of A  
 C) A is correct but R is not correct  
 D) R is correct but A is not correct

12. The value of  $K_1$  using the fourth order Runge - Kutta method with  $x_0 = 0$  and  $y_0 = 1$  and

$$h = 0.5 \text{ for } \frac{dy}{dx} = x^2 + y \text{ is:}$$

- A) 1 B) 0.75  
 C) 0.5 D) 0.25

13. The parametrizations of the curves  $y^2 = x^3$  and  $y^2 = x^3 + x^2$  is given respectively by :

- A)  $\alpha(t) = (t^2, t^3)$  and  $\alpha(t) = (t^2 - 1, t(t^2 - 1))$   
 B)  $\alpha(t) = (t^2, t^3)$  and  $\alpha(t) = (t^2 - 1, t^2 - 1)$   
 C)  $\alpha(t) = (t^2 - 1, t(t^2 - 1))$  and  $\alpha(t) = (t^2, t^3)$   
 D)  $\alpha(t) = (t^2 - 1, t^2 - 1)$  and  $\alpha(t) = (t^2, t^3)$ .

14. Consider the complex function  $f(z) = (z^2 + 2z + 1)e^{iz}$ . In which of the following regions is  $f(z)$  analytic?

- A) Entire complex plane B)  $\operatorname{Re}(z) > 0$   
 C)  $\operatorname{Im}(z) < 0$  D)  $|z| < 1$



15. Let  $B(x, r) = \{y : \|y - x\| < r\}$  and  $B^*(x, r) = \{y : \|y - x\|^* < r\}$ . Then, which of the following is true, given  $\|\cdot\|$  and  $\|\cdot\|^*$  are equivalent norms on  $V$ ?
- A) There exists constants  $c_1$  and  $c_2$  such that  $B(x, c_1 r) \subset B^*(x, r) \subset B(x, c_2 r)$  for all  $x \in V$  and  $r > 0$ .
  - B) For every  $c_1$  and  $c_2$ ,  $B(x, c_1 r) \subset B^*(x, r) \subset B(x, c_2 r)$  for all  $x \in V$  and  $r > 0$ .
  - C) Both A and B
  - D) None of A or B.
16. Which of the statements is true for a uniformly continuous function?
- A) Any Lipschitz function is uniformly continuous
  - B)  $f(x) = \sqrt{x}$  is Lipschitz continuous but not uniformly continuous on  $[0, \infty)$ .
  - C)  $f(x) = x^2$  is uniformly continuous on  $\mathbb{R}$ .
  - D) All of the above.
17. Consider a function  $f(x, y, z) = e^{xy} \sin(z)$ . Let  $v = \langle 1, -1, 1 \rangle$  and  $P(0, \pi, \pi/2)$ . Which of the following statements is true about the directional derivative  $D_v f$  and the total derivative  $df$  at point  $P$ ?
- A)  $D_v f(P) = 0$  and  $df(P) = d(x - y + z)$ .
  - B)  $D_v f(P) \neq 0$  and  $df(P) = \pi / \sqrt{3} i$ .
  - C)  $D_v f(P) = 0$  and  $df(P) = \pi e^x \sin(\pi/2) dx + e^x \cos(\pi/2) dz$ .
  - D)  $D_v f(P) \neq 0$  and  $df(P) = d(\pi x)$ .
18. Consider a matrix  $A = [\{3, 1\}, \{-1, 1\}]$  where  $\{3, 1\}$  is the first row and  $\{-1, 1\}$  is the second row. Which of the following is true about  $A$ ?
- A) The characteristic polynomial of  $A$  is given by  $(x-2)^2$
  - B) The minimal polynomial of  $A$  is given by  $(x-2)$
  - C)  $A$  is diagonalizable
  - D)  $(1, 1)$  is the eigenvector corresponding to the eigenvalue 2.

19. Consider a homomorphism  $\varphi$  from  $C^*$  to  $C^*$  such that  $x \mapsto x^*$ . Which of the following is true?
- A)  $\varphi$  is an isomorphism  
 B)  $\text{Ker } \varphi = \{\pm 1\}$   
 C) Both A and B  
 D) None of the above.
20. Given the function  $u(x, y) = e^x \cos(y)$ , which of the following functions is its harmonic conjugate?
- A)  $e^x \sin(y) + C$   
 B)  $e^x \tan(y) + C$   
 C)  $e^x \cos(y) - y + C$   
 D)  $e^x \sin(y) - x + C$
21. The integer solutions of the diophantine equation  $56x + 72y = 40$  are given by:
- A)  $x = 20 + 9t, y = -15 - 7t$   
 B)  $x = 20 + 10t, y = -15 - 7t$   
 C)  $x = 20 + 9t, y = -15 + 8t$   
 D)  $x = 20 + 10t, y = -15 + 8t$
22. Consider Let  $Y$  and  $Z$  be subspaces of a normed space  $X$ ,  $Y$  is a closed subspace of  $X$  and a proper subset of  $Z$ . What is true about every real number  $\theta$  in the interval  $(0, 1)$ ?
- A) There exists a  $z \in Z$  such that  $\|z\| = 1, \|z - y\| \geq \theta$  for all  $y \in Y$ .  
 B) There exists a  $y \in Y$  such that  $\|y\| = 1, \|y - z\| \geq \theta$  for all  $z \in Y$ .  
 C) There exists a  $z \in Z$  such that  $\|z\| = 1, \|z - y\| \leq \theta$  for all  $y \in Y$ .  
 D) There exists a  $y \in Y$  such that  $\|y\| = 1, \|y - z\| \leq \theta$  for all  $z \in Y$ .
23. The number of generators of a cyclic group of order 504 are:
- A) 504  
 B) 216  
 C) 144  
 D) 42

24. Consider the set  $X = \{x, y, z\}$  and the topology given by  $\tau = \{\emptyset, \{y\}, \{x, y\}, \{y, z\}, X\}$ . Consider the set  $A = \{y, z\}$ . The closure of  $A$  is :
- $\emptyset$
  - $A$
  - $\tau$
  - $X$
25. Which of the following is true?
- The sum of two  $T$ -invariant subspaces is also  $T$ -invariant
  - If  $J$  is a Jordan canonical form of a linear operator  $T$  and  $c \in R$ , then  $cJ$  is a Jordan canonical form of the linear operator  $cT$ .
  - Let  $T$  be a linear operator on a finite - dimensional vector space  $V$  whose characteristic polynomial splits, and let  $\lambda_1, \dots, \lambda_k$  be the distinct eigenvalues of  $T$ . For each  $i$ , let  $\beta_i$  be a basis of  $E_{\lambda_i}$ , then  $\beta_1 \cup \dots \cup \beta_k$  is a Jordan canonical basis of  $T$ .
  - For any  $v \in V$ , the  $T$ -cyclic subspace generated by  $v$  is the same as the  $T$ -cyclic subspace generated by  $T(v)$ .
26. The infinitude of primes is due to:
- Goldbach.
  - Euclid
  - Collatz.
  - Gauss.
27. Consider the initial value problem  $dy/dx = -x + y$ ,  $y(0) = 1$ . Approximate  $y(1)$  upto 2 decimal places using Euler's method with a step size of  $h = 0.2$ .
- 1.21
  - 1.35
  - 1.48
  - 1.65



28. If  $f$  is generalized Riemann integrable on  $[a, b]$ , which of the following are equivalent?
- $f$  is Lebesgue integrable on  $[a, b]$ .
  - There exists a Lebesgue integrable function  $\omega$  such that  $f(x) \leq \omega(x) \forall x \in [a, b]$ .
  - There exists a Lebesgue integrable function  $\alpha$  such that  $\alpha(x) \leq f(x) \forall x \in [a, b]$ .
  - All of the above.
29. Let  $\beta \in S_7$  and let  $\beta^4 = (1243657)$ . Then  $\beta$  is given by :
- (1234567)
  - (1243657)
  - (1467235)
  - (1467325)
30. The length of the arc of the function  $f(x) = 3x^2 + \sin x$  from  $x = 2$  to  $x = 4$  is given by :
- $\int_2^4 (3x^2 + \sin x) dx$
  - $\int_2^4 \sqrt{1 + (3x^2 + \sin x)} dx$
  - $\int_2^4 \sqrt{1 + (6x + \cos x)} dx$
  - $\int_2^4 \sqrt{1 + (6x + \cos x)^2} dx$
31. The dual space  $X'$  of  $X$  is Banach space only when :
- $X$  is a Banach space.
  - $X$  is any normed space.
  - $X$  is any space
  - $X$  is a complete space.
32. Which of the following sets of axioms correctly represents the Kuratowski closure axioms for a topological space  $(X, \tau)$ ?
- $cl(A) \subseteq A$
  - $cl(A) = cl(cl(A))$
  - $cl(\phi) \neq \phi$
  - All of the above
33. Let  $V$  be a vector space and  $W$  be a subspace of  $V$ . Which of the following statements about the quotient space  $V/W$  is true?
- $V/W$  is isomorphic to  $W$
  - $V/W$  contains all linear combinations of elements from  $V$  and  $W$
  - $V/W$  is the set of all cosets of  $W$  in  $V$
  - $V/W$  is the dual space of  $V$

34. The remainder when  $2^{50}$  is divided by 7 is:

- A) 2
- B) 3
- C) 4
- D) 5

35. Which of the following functions have a zero curvature?

- A) A constant function
- B) A linear function.
- C) A quadratic function.
- D) A cubic function

36. Consider a continuous function  $f: [a, b] \rightarrow \mathbb{R}$  such that  $f(a) < 0$  and  $f(b) > 0$ . According to Bolzano's Intermediate Value Theorem, which of the following statements is incorrect?

- A) There exists a point  $c$  in  $(a, b)$  such that  $f(c) = 0$
- B) The function  $f$  takes on any value between  $f(a)$  and  $f(b)$  at least once.
- C) The function  $f$  must have a root in  $(a, b)$
- D) The function  $f$  always has multiple roots in  $(a, b)$

37. Assertion (A): For a closed contour  $C$  lying in the open disc  $|z| < 2$ ,  $\int_C \frac{ze^z}{(z^2 + 9)^2} dz = 0$

Reason (R): The integrand is analytic in a simply connected domain and the two singularities  $z = \pm 3i$  of the integrand are exterior to the disk.

Which of the following is true?

- A) Both A and R are true and R is a correct explanation of A.
- B) Both A and R are true but R is not a correct explanation of A.
- C) A is true but R is false.
- D) A is false but R is true.

38. In how many points does the cubic  $r(t) = h(t^3, t, t^2)$  intersect  $x^2 + y^2 + z^2 = 0$ .

- A) 1
- B) 0
- C) 3
- D) Infinitely many points.

39. What is not true about the permutations  $x = (12)(34)$ ,  $y = (56)(13)$ ?

- A)  $x$  and  $y$  are conjugate to each other.
- B)  $x$  and  $y$  are equivalent to each other.
- C) There exists a permutation  $a = (134625)$  such that  $a^{-1}xa = y$ .
- D) There exists a permutation  $a = (134652)$  such that  $a^{-1}xa = y$ .

40. **Assertion (A)** : Let  $X$  be a topological space and  $Y$  be a subset of  $X$ . If  $\tau$  is the topology on  $X$ , then the subspace topology  $\tau_Y$  on  $Y$  is defined as  $\tau_Y = \{Y \cap U : U \in \tau\}$ .

**Reason (R)** : The subspace topology  $\tau_Y$  is the coarsest topology on  $Y$  that makes the inclusion map  $i : Y \rightarrow X$  continuous.

- A) Both A and R are true, and R is the correct reason for A.
  - B) Both A and R are true, but R is not the correct reason for A.
  - C) A is true, but R is false.
  - D) A is false, but R is true.
41. Let  $b : R \times R \rightarrow R$  be the bilinear form defined by  $b(X, Y) = x_1y_2 + x_2y_1$  where  $X = (x_1, x_2)$  and  $Y = (y_1, y_2)$ . What is the  $2 \times 2$  matrix  $B$  of  $b$  relative to the standard basis  $U = \{e_1 = (1, 0), e_2 = (0, 1)\}$ ?
- A)  $[\{1, 0\}, \{0, 1\}]$  where  $\{1, 0\}$  is the first row and  $\{0, 1\}$  is the second row
  - B)  $[\{0, 1\}, \{1, 0\}]$  where  $\{0, 1\}$  is the first row and  $\{1, 0\}$  is the second row
  - C)  $[\{1, 0\}, \{0, 0\}]$  where  $\{1, 0\}$  is the first row and  $\{0, 0\}$  is the second row
  - D)  $[\{0, 1\}, \{0, 0\}]$  where  $\{0, 1\}$  is the first row and  $\{0, 0\}$  is the second row

42. Hahn-Banach theorem is based on the extension of:

- A) a linear functional on some subspace to the whole vector space with same norm
- B) a linear functional on some subspace to the whole vector space with any norm
- C) a linear functional on the whole vector space to its subspace with same norm
- D) a linear functional on the whole vector space to its subspace with any norm



43. A number theoretic function  $f$  is said to be multiplicative if:
- $f(mn) = f(m)f(n)$  where  $\gcd(m,n) = \text{prime } p$
  - $f(mn) = f(m)f(n)$  where  $\gcd(m,n) = \min(m,n)$
  - $f(mn) = f(m)f(n)$  where  $\gcd(m,n) = \max(m,n)$
  - $f(mn) = f(m)f(n)$  where  $\gcd(m,n) = 1$
44. **Assertion (A):** The correspondence between  $D_4$  and  $S_4$  is an injective homomorphism which is not surjective
- Reasoning (R):** Cayley's theorem states that every group  $G$  of order  $n$  is isomorphic to a subgroup of  $S_n$ .
- Both A and R are true, and R is the correct explanation for A.
  - Both A and R are true, but R is not the correct explanation for A.
  - A is true, but R is false.
  - A is false, but R is true.
45. Consider a space curve  $r(t) = (t^2, t^3, t^4)$ . Which of the following statements is true about torsion ( $\tau$ ) and curvature ( $\kappa$ ) of the curve at  $t = 1$ ?
- $\tau = 0$  and  $\kappa = 0$
  - $\tau > 0$  and  $\kappa > 0$
  - $\tau = 0$  and  $\kappa > 0$
  - $\tau > 0$  and  $\kappa = 0$
46. Match the correct number corresponding to the given Euler's phi-function:
- |                 |          |
|-----------------|----------|
| 1. $\phi(999)$  | i. 400   |
| 2. $\phi(1000)$ | ii. 720  |
| 3. $\phi(1001)$ | iii. 648 |
- 1 - i, 2 - ii, 3 - iii
  - 1 - i, 2 - iii, 3 - ii
  - 1 - iii, 2 - i, 3 - ii
  - 1 - iii, 2 - ii, 3 - i

47. For bounded functions  $f(x)$  and  $g(x)$  with  $f(x) \leq g(x)$  for all  $x$  in  $D$ , which of the following is NOT true?

- A)  $\sup f(D) \leq \sup g(D)$
- B)  $\sup f(D) \leq \inf g(D)$
- C)  $\inf f(D) \leq \inf g(D)$
- D)  $\sup g(D)$  is an upper bound for  $f(D)$

48. Match the curves with their respective evolute:

- |                       |  |
|-----------------------|--|
| 1) Ellipse            | i) Astroid   |
| 2) Parabola           | ii) Semicubical parabola                               |
| 3) Circle             | iii) Center  |
| 4) Logarithmic spiral | iv) the same curve rotated counterclockwise by $\pi/2$ |
- A) 1 - i, 2 - ii, 3 - iii, 4 - iv      B) 1 - ii, 2 - i, 3 - iv, 4 - iii
- C) 1 - iii, 2 - iv, 3 - i, 4 - ii      D) 1 - iv, 2 - iii, 3 - ii, 4 - i

49. Let  $(X, \tau_X)$  and  $(Y, \tau_Y)$  be two topological spaces such that  $f: X \rightarrow Y$  is continuous, then :

- A) For every  $U$  in  $\tau_Y$ , there exists a  $V$  in  $\tau_X$  such that  $f^{-1}(V) = U$ .
- B) For every  $U$  in  $\tau_Y$ , there exists a  $V$  in  $\tau_X$  such that  $f^{-1}(U) = V$
- C) For every  $V$  in  $\tau_X$ , there exists  $U$  in  $\tau_Y$  such that  $f^{-1}(V) = U$
- D) For every  $V$  in  $\tau_X$ , there exists a  $U$  in  $\tau_Y$  such that  $f^{-1}(U) = V$

50. Match the following with the correct consequence of the quadratic form given by  $Q(x)=x'Ax$  where  $A$  is the associated symmetric matrix:

- |                          |   |
|--------------------------|---|
| 1. Positive definite     | i) $Q(x) \geq 0$ for every $x \neq 0$   |
| 2. Positive semidefinite | ii) $Q(x) > 0$ for every $x \neq 0$   |
| 3. Indefinite            | iii) There exist vectors $x$ and $y$ such that $Q(x) < 0$ and $Q(y) > 0$      |
|                          | iv) There exist vectors $x$ and $y$ such that $Q(x) \geq 0$ and $Q(y) \leq 0$ |

- A) 1 - i, 2 - ii, 3 - iii  
 B) 1 - i, 2 - ii, 3 - iv  
 C) 1 - ii, 2 - i, 3 - iii  
 D) 1 - ii, 2 - i, 3 - iv

51. If  $G$  is a finite group of order 217, then which of the following is true about  $G$ ?

- A)  $G$  is cyclic with 180 generators  
 B) The Sylow 7-subgroup of  $G$  is normal in  $G$   
 C) The Sylow 31-subgroup of  $G$  is normal in  $G$   
 D) All of the above.

52. Match the theorems to their examples which verify their proofs:

- |   |  |
|---|--|
| 1. Fermat's little theorem.   |  |
| 2. Chinese remainder theorem.   |  |
| 3. Wilson's theorem   |  |
| i. It is possible to divide the integers 2, 3, ..... 11 into $(13-3)/2 = 5$ pairs, each product of which is congruent to 1 modulo 13.   |  |
| ii. $5^{10}$ is congruent to 1 (mod 11) $\Rightarrow 5^{38}$ is congruent to 4 (mod 11).  |  |
| iii. For a system of congruences $x \equiv 2 \pmod{3}$ , $x \equiv 3 \pmod{5}$ , $x \equiv 2 \pmod{7}$ , we have $n = 3 \cdot 5 \cdot 7 = 105$ . Now the linear congruences $35x \equiv 1 \pmod{3}$ , $21x \equiv 1 \pmod{5}$ , $15x \equiv 1 \pmod{7}$ are satisfied by $x_1 = 2$ , $x_2 = 1$ , $x_3 = 1$ . Thus, a solution of the system is given by $x = 2 \cdot 35 \cdot 2 + 3 \cdot 21 \cdot 1 + 2 \cdot 15 \cdot 1 = 233 \equiv 23 \pmod{105}$ . |  |

- |                           |                           |
|---------------------------|---------------------------|
| A) 1 - iii, 2 - ii, 3 - i | B) 1 - ii, 2 - i, 3 - iii |
| C) 1 - ii, 2 - iii, 3 - i | D) 1 - i, 2 - ii, 3 - iii |





58. Given two linearly independent functions  $f(x)$  and  $g(x)$  that are differentiable on some interval, what is true about their Wronskian?
- If  $W(f,g)(x_0) \neq 0$  for some  $x_0$  in the interval, then  $f(x)$  and  $g(x)$  are linearly independent on the interval
  - $W(f,g)(x_0) \neq 0$  for some  $x_0$  in the interval if and only if  $f(x)$  and  $g(x)$  are linearly independent on the interval
  - If  $f(x)$  and  $g(x)$  are linearly independent on the interval then  $W(f,g)(x_0) \neq 0$  for some  $x_0$  in the interval
  - If  $W(f,g)(x_0) \neq 0$  for every  $x_0$  in the interval, then  $f(x)$  and  $g(x)$  are linearly independent on the interval
59. Define a function  $f(x) = x$  when  $x$  is rational and  $f(x) = x^2$  when  $x$  is irrational where  $x \in [0,1]$ . Which of the following statements is true?
- $f$  is Riemann integrable on  $[0,1]$  and  $\int_0^1 f(x) dx = 1/2$
  - $f$  is Riemann integrable on  $[0,1]$  and  $\int_0^1 f(x) dx = 1/3$
  - $f$  is not Riemann integrable on  $[0,1]$ .
  - None of the above
60. Match the following to their corresponding statements:
- Uniform Boundedness Theorem
  - Open Mapping Theorem
  - Bounded Inverse Theorem
  - Closed Graph Theorem
- If  $T: X \rightarrow Y$  is a continuous linear operator between Banach spaces which is also onto, then  $T$  maps open sets to open sets.
  - A linear operator  $T: X \rightarrow Y$  between Banach spaces has a bounded inverse if and only if it is bijective and continuous.
  - If  $X$  and  $Y$  are Banach spaces and  $T: X \rightarrow Y$  is a linear operator with a closed graph, then  $T$  is bounded.
  - For a family of continuous linear operators on a Banach space, pointwise boundedness is equivalent to uniform boundedness.
- 1 - i, 2 - ii, 3 - iii, 4 - iv
  - 1 - ii, 2 - iii, 3 - iv, 4 - i
  - 1 - iv, 2 - i, 3 - ii, 4 - iii
  - 1 - iii, 2 - i, 3 - ii, 4 - iv

61. Which of the following is true for the values of the Legendre symbols:
- A)  $19/23 = -1, -23/59 = -1, 20/31 = -1$
  - B)  $19/23 = 1, -23/59 = 1, 20/31 = 1$
  - C)  $19/23 = 1, -23/59 = -1, 20/31 = -1$
  - D)  $19/23 = -1, -23/59 = 1, 20/31 = 1$
62. The solution of the differential equation  $yy'' + (y')^2 = 0$  is:
- A)  $y = Ax^2 + B$
  - B)  $y = Ax^2 + Bx$
  - C)  $x = Ay^2 + B$
  - D)  $x = Ay^2 + By$
63. For the function  $f(z) = e^{z^2}$ , which of the following statements is true?
- A)  $f(z)$  is a bounded entire function, so by Liouville's theorem, it must be constant.
  - B)  $f(z)$  is an entire function but not bounded, so Liouville's theorem doesn't apply
  - C) By the maximum modulus principle,  $f(z)$  has a maximum value.
  - D)  $f(z)$  is not an entire function.
64. Which of the following functions/ maps is not a diffeomorphism?
- A)  $x^3 + x$
  - B)  $x^{1/3}$
  - C) identity map from a smooth manifold to itself
  - D) rotations of a surface of revolution about its axis.
65. Let  $R = \{a + b\sqrt{-3} \mid a, b \in \mathbb{Z}\} \subset \mathbb{C}$ , where  $\mathbb{C}$  is the complex number field. Which of the following is not true about  $R$ ?
- A)  $R$  is a unique factorization domain
  - B)  $R$  is an integral domain
  - C) None of the above
  - D) Both A and B

66. Which of the following is a restatement of the Cauchy-Schwarz inequality?

- A)  $(\sum_{i=1}^n u_i v_i) \leq \sum_{i=1}^n u_i^2 \sum_{i=1}^n v_i^2$
- B)  $|u_1 \overline{v_1} + \dots + u_n \overline{v_n}|^2 \leq (\sum_{i=1}^n u_i^2) (\sum_{i=1}^n v_i^2)$
- C)  $|\int f(x) \overline{g(x)} dx|^2 \leq \int |f(x)|^2 dx \int |g(x)|^2 dx$
- D) All of the above

67. What is true for the differential equation  $y'' - 2y' + y = \frac{e^t}{t^2 + 1}$ ?

- A) Its general solution is given by  $y(t) = c_1 e^t + c_2 t e^t - 1/2 e^t \ln(1+t^2)$
- B) Its particular solution is given by  $y_p(t) = -1/2 e^t \ln(1+t^2)$
- C) The Wronskian of the complementary solutions of the given differential equation is  $e^{2t}$
- D) All of the above

68. Two points  $x$  and  $y$  in a topological space are topologically distinguishable if:

- A) they do not have exactly the same neighbourhoods
- B) at least one of the points does not belong to the other's closure
- C) Both A and B
- D) None of A and B

69. Which of the following is true if  $a$  is the quadratic residue of the odd prime  $p$ ?

- A)  $a$  is not a primitive root of  $p$
- B) The integer  $p-a$  is a quadratic residue or non-residue of  $p$  according as  $p \equiv 1 \pmod{4}$  or  $p \equiv 3 \pmod{4}$
- C) Both A and B.
- D) None of A and B.

70. Consider the series  $\sum \frac{(-1)^n}{\ln n}$ . What can be said about this series?

- A) The series is convergent on  $\mathbb{R}$ .
- B) The series is divergent.
- C) The series is convergent on  $[2, \infty)$ .
- D) The series is absolutely convergent.

71. Consider two curves  $r_1(t) = (t, t^2, t^3)$  and  $r_2(s) = (s, s^2, 2s^3)$  parametrized by  $t$  and  $s$  respectively. At the point  $(1, 1, 1)$ , what is the cosine of the angle between the two curves?

- A)  $\frac{23}{\sqrt{14}\sqrt{41}}$
- B)  $\cos^{-1} \frac{23}{\sqrt{14}\sqrt{41}}$
- C)  $\frac{23}{\sqrt{15}\sqrt{42}}$
- D)  $\cos^{-1} \frac{23}{\sqrt{15}\sqrt{42}}$

72. Let  $f(z)$  be a holomorphic function on the unit disk  $D = \{z \in \mathbb{C} : |z| < 1\}$  such that  $f(0) = 0$  and  $|f(z)| \leq 1$  for all  $z \in D$ . Which of the following statements is true?

- A)  $|f(z)| < |z|$  for all  $z \in D$  except  $z = 0$
- B) There exists a complex number  $\lambda$  such that  $f(z) = \lambda z$  for all  $z \in D$  and  $|\lambda| = 1$ .
- C) Both A and B.
- D) Either A or B.

73. Consider a parametric curve  $C$  given by  $r(t) = (t^2, t^3, t^4)$ . Which of the following parametrizations  $r^*(s)$  is orthogonal to the original curve  $C$  at the point  $(1, 1, 1)$ ?

- A)  $r^*(s) = (1, 1, 1)$
- B)  $r^*(s) = (1, -1, 1)$
- C)  $r^*(s) = (-1, 1, 1)$
- D) All of the above



74. Assertion (A) : The polynomial  $x^3 + 3x - 2\pi$  is irreducible in  $\mathbb{R}$ .

Reasoning (R) : If there exists a prime number  $p$  such that  $p$  does not divide  $a_n$  and  $p$  divides  $a_i$  for all  $i = 0, 1, \dots, n-1$  and  $p^2$  does not divide  $a_0$  then  $f(X)$  is reducible over  $\mathbb{Q}$ .

- A) Both A and R are correct and R is a correct explanation to A
- B) Both A and R are correct and R is not a correct explanation to A
- C) A is true, R is not true
- D) Both A and R are not true

75. Let  $X$  be a metric space and  $U$  be an open cover of  $X$ . Which of the following statements is true regarding the existence of a Lebesgue number  $\delta$  for  $U$ ?

- A) A Lebesgue number  $\delta$  exists if and only if  $X$  is a compact metric space.
- B) A Lebesgue number  $\delta$  exists for any metric space  $X$
- C) A Lebesgue number  $\delta$  exists if and only if  $X$  is a complete metric space.
- D) A Lebesgue number  $\delta$  exists if and only if  $X$  is a connected metric space.

76. Let  $V$  be an inner product space over  $\mathbb{R}^2$ , and let  $S = \{v_1, v_2\}$  be a set of vectors in  $V$  where  $v_1 = (1, 0)$ ,  $v_2 = (1, 1)$ . Which of the following sets is an orthogonal basis for the subspace spanned by  $S$ ?

- A)  $\left(0, \frac{1}{\sqrt{2}}\right), \left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$
- B)  $\left(\frac{1}{\sqrt{2}}, 0\right), \left(0, \frac{1}{\sqrt{2}}\right)$
- C)  $(1, 0), (0, 1)$
- D)  $(1, 0), (1, 1)$

77. The coefficient of  $x^4$  in the Maclaurin's series expansion of  $e^{\sin x}$  is:

- A)  $1/4$
- B)  $-1/4$
- C)  $1/8$
- D)  $-1/8$



82. Consider the Legendre polynomials  $P_n(s)$  given by Rodrigues' formula.

$P_n(s) = \frac{1}{n!2^n} \frac{d^n}{ds^n} (S^2 - 1)^n, n \in N_0$ . Which of the following is true for the eigenvalues  $\lambda_n$  corresponding to these polynomials/eigen functions?

- A)  $\lambda_n = n(n+1)$
- B)  $\lambda_n = n(n-1)$
- C)  $\lambda_n = -n(n+1)$
- D)  $\lambda_n = n^2$

83. Which of the following statements is true regarding perfect numbers?

- A) If  $2^k - 1$  is prime ( $k > 1$ ), then  $n = 2^{k-1}(2^k - 1)$  is perfect and every even perfect number is of this form
- B) All perfect numbers end, alternately, in 6 and 8.
- C) A positive integer  $n$  is perfect if  $n$  is equal to the sum of all its positive divisors
- D) The  $n$ th perfect number  $P_n$  contains at the most  $n$  digits.

84. Let  $\phi$  be the bounded linear functional on  $R^2$  defined by  $\phi(x, y) = 4x$ . Then the unique element of  $R^2$  representing  $\phi$  given by the Riesz representation theorem is :

- A) (0, 4)
- B) (4, 0)
- C) (1, 0)
- D) (0, 1)

85. If the basis for the standard topology on  $R$  is  $\{(a, b) \mid a, b \in R, a < b\}$ , then the basis for the standard topology on  $R \times R$  is given by :

- A)  $\{(a, b) \times (c, d) \mid a, b, c, d \in R, a < b, c < d\}$ .
- B)  $\{(a, b) \times (c, d) \mid a, b, c, d \in R, a < c, b < d\}$
- C)  $\{(a, b) \mid a, b \in R, a < b\}$
- D) The basis cannot be defined.

86. Define  $\varphi: Z_2 \rightarrow Z$  by  $\varphi(a_1, a_2) = 2a_1 + 3a_2$ . What is true about  $\varphi$ ?

- A)  $\varphi$  is a  $Z$ -module homomorphism.
- B)  $\ker(\varphi) = \{(a_1, a_2) \in Z_2 \mid 2a_1 + 3a_2 = 0\}$
- C)  $\text{im}(\varphi) = Z$
- D) All of the above.

87. The zeroth-order Bessel equation  $xy''(x) + y'(x) + xy(x) = 0$  has two linearly independent solutions denoted by  $J_0$  and  $Y_0$ . Which of the following is true?

- A)  $J_0$  has a limit at  $x = 0$ .
- B)  $Y_0$  is unbounded at  $x = 0$ .
- C) Singularity of  $y_0$  at 0 is logarithmic.
- D) All of the above.

88. The Farey fractions of order  $n$  are :

- A) a set of rational numbers  $r/s$ ,  $0 \leq r \leq n \leq s$  and  $\gcd(r, n) = 1$ , written in order of increasing size.
- B) a set of rational numbers  $r/s$ ,  $0 \leq r \leq n \leq s$  and  $\gcd(r, s) = 1$ , written in order of increasing size.
- C) a set of rational numbers  $r/s$ ,  $0 \leq r \leq s \leq n$  and  $\gcd(r, n) = 1$ , written in order of increasing size.
- D) a set of rational numbers  $r/s$ ,  $0 \leq r \leq s \leq n$  and  $\gcd(r, s) = 1$ , written in order of increasing size.

89. Let  $\{x_n\}$  be a bounded sequence. Consider the set  $W$  of  $w \in R$  such that  $x_n < w$  for at most a finite number of  $n$ . What is  $\liminf x_n$ ?

- A) Infimum of  $W$ .
- B) Supremum of  $W$ .
- C) Infimum of the complement of  $W$ .
- D) Supremum of the complement of  $W$ .



90. The nature and location of the singularity of the function  $f(z) = \frac{e^z}{z^2 - 1}$  is:
- Simple pole at  $z = 1$  and  $-1$
  - Removable singularity at  $z = 1$  and  $-1$
  - Essential singularity at  $z = 1$  and  $-1$
  - Simple pole at  $z = -1$  only
91. What is true about the degree of the product of the functions  $f(x) = (2x + 1)$  and  $g(x) = (3x^2 + 1)$  in  $\mathbb{Z}_6[x]$ ?
- $\deg f \cdot g = \deg f + \deg g$
  - $\deg f \cdot g = \deg f - \deg g$
  - $\deg f \cdot g = \deg f \cdot \deg g$
  - $\deg f \cdot g = \deg f / \deg g$
92. The second approximate value of  $x_1$  in the following set of simultaneous equations with initial approximation as  $(0, 0, 0)$  is:
- $$\begin{aligned} 2x_1 + x_2 + x_3 &= 5, \\ 3x_1 + 5x_2 + 2x_3 &= 15 \\ 2x_1 + x_2 + 4x_3 &= 8 \end{aligned}$$
- 2.5
  - 1.5
  - 0.375
  - 1.5625
93. Consider the system of differential equations  $\frac{dx}{dt} = 2x + y$  and  $\frac{dy}{dt} = x - y$ . What are the eigenvalues of the coefficient matrix of the system?
- $[1, 3]$
  - $[-1, -3]$
  - $\frac{1 \pm \sqrt{14}}{2}$
  - $\frac{1 \pm \sqrt{13}}{2}$
94. Which of the following sets are not connected?
- $GL(2, \mathbb{R})$
  - $\{(x, y) \in \mathbb{R}^2 : x^2 - y^2 = 1\}$
  - $\{(x, y) \in \mathbb{R}^2 : x \in \mathbb{Q}, y \notin \mathbb{Q}\}$
  - All of the above

95. The Laurent series expansion of  $f(z) = \frac{1}{z(z-1)} = \frac{1}{z^2} + \frac{1}{z^3} + \frac{1}{z^4} + \dots$  is valid in the domain:

- A)  $0 < |z| < 1$
- B)  $|z| \geq 1$
- C)  $0 \leq |z-1| \leq 1$
- D)  $|z-1| \geq 1$

96. **Assertion:** A set  $S$  in  $\mathbb{R}^n$  is compact if and only if every sequence in  $S$  has a subsequence that converges to a point in  $S$ .

**Reasoning :** The Heine - Borel theorem states that a set is compact if and only if it is closed and bounded, and closed sets contains all their limit points.

- A) Both Assertion and Reasoning are true, and Reasoning is the correct explanation for Assertion.
- B) Both Assertion and Reasoning are true, but Reasoning is not the correct explanation for Assertion.
- C) Assertion is true, but Reasoning is false.
- D) Assertion is false, but Reasoning is true.

97. For what values of  $\alpha$  and  $\beta$  is the differential equation  $(y^\alpha - 2x)dx + (2x^\beta y + 1)dy = \text{exact?}$

- A)  $\alpha = 1$  and  $\beta = 2$ .
- B)  $\alpha = 2$  and  $\beta = 1$
- C)  $\alpha = 1$  and any  $\beta$ .
- D)  $\alpha = 2$  and any  $\beta$ .

98. If  $V, W$  are irreducible complex  $G$  - spaces and are not isomorphic, then the only possible map between them is :

- A) The Zero map
- B) The Identity map
- C) Both A and B
- D) None of the above

99. Consider the partial differential equation  $p^2 - q = 1$ . Then, which of the following is true?

- A)  $z = ax + (a^2 - 1)y + c$  is a complete solution.
- B) Complete solution does not exist.
- C)  $z = ax + (a^2 - 1)y + c$  is a singular solution.
- D)  $z = ax + by + c$  is a singular solution.

100. Consider a function  $f(x)$  that is continuous on the open interval  $(0,1)$ . Which of the following statements is necessary and sufficient for  $f(x)$  to be uniformly continuous on  $(0,1)$ ?

- A)  $f(x)$  has a bounded derivative on  $(0,1)$ .
- B)  $f(x)$  can be extended to a continuous function on the closed interval  $[0,1]$ .
- C)  $f(x)$  is Lipschitz continuous on  $(0,1)$ .
- D)  $f(x)$  is Riemann integrable on  $(0,1)$ .

101. Match the mappings to their respective fixed points.

- |  |               |
|--|---------------|
| 1. Translation.  | i. 2          |
| 2. Rotation.   | ii. infinite. |
| 3. Mapping $x \mapsto x^2$ of $\mathbb{R}$ into itself.                                    | iii. 1        |
| 4. The projection $(\xi_1, \xi_2) \mapsto \xi_1$ of $\mathbb{R}^2$ onto the $\xi_1$ -axis. | iv. 0         |

A) 1 - i, 2 - ii, 3 - iii, 4 - iv

B) 1 - iv, 2 - iii, 3 - i, 4 - ii

C) 1 - ii, 2 - iii, 3 - i, 4 - iv

D) 1 - iii, 2 - iv, 3 - i, 4 - ii

102. Given a function  $f(x) = x^2 - 4$ , which of the following is the correct iterative formula for finding the root using the Newton-Raphson method?

A)  $x_{n+1} = \frac{x_n^2 + 4}{2x_n}$

B)  $x_{n+1} = \frac{x_n^2 - 4}{2x_n}$

C)  $x_{n+1} = \frac{x_n^2 - 4}{2x_n + 1}$

D)  $x_{n+1} = \frac{x_n^2 - 4}{2x_n - 1}$

103. Let A and B be the  $2 \times 2$  matrices over reals with  $A = \begin{bmatrix} 1 & 3 \\ 3 & 1 \end{bmatrix}$  where  $\{1, 3\}$  is the first row and  $\{3, 1\}$  is the second row,  $B = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$  where  $\{0, -1\}$  is the first row and  $\{1, 0\}$  is the second row. Which of the following statements is correct?

- A) Both A and B are diagonalizable
- B) A is diagonalizable but B is not
- C) B is diagonalizable but A is not
- D) Neither A nor B is diagonalizable.

104. Consider the function  $f(x) = x^3 - 2x^2 + 6x - 24$ . Use the bisection method to find a root of this function in the interval  $[2, 4]$ . The new interval after the first iteration is:

- A)  $[2, 3]$
- B)  $[3, 4]$
- C)  $[2.5, 4]$
- D)  $[2, 3.5]$

105. The residue of  $\frac{e^z}{(z^2 + 4)^2}$  at  $z = 2i$  is :

- A)  $\frac{3}{32e^2}$
- B)  $\frac{-3}{32e^2}$
- C)  $\frac{3i}{32e^2}$
- D)  $\frac{-3i}{32e^2}$

106. Assume  $f$  and  $g$  are continuous functions on  $[a, b]$ , differentiable on  $(a, b)$  such that  $g'(x) \neq 0 \forall x$  in  $(a, b)$ . If  $f(a) = 1$  and  $g(a) = 0$ , which of the following must be true?

- A)  $f'(c) = g'(c)$  for some  $c$  in  $(a, b)$
- B)  $f'(c) = 1$  for some  $c$  in  $(a, b)$ .
- C)  $\frac{f'(c)}{g'(c)} = \frac{f(b)-1}{g(b)}$  for all  $c$  in  $(a, b)$
- D)  $\frac{f'(c)}{g'(c)} = \frac{f(b)-1}{g(b)}$  for some  $c$  in  $(a, b)$



107. The cauchy problem,  $yu_x + xu_y = 0$ ,  $u(0, y) = e^{-y^2}$ , has
- A) No solution. B) Exactly one solution.  
C) Exactly two solutions. D) Infinitely many solutions.
108. Consider the initial value problem  $y'(t) = f(t, y(t))$  with  $y(0) = y_0$ , where  $f(t, y)$  is a continuous functions. Which of the following conditions is sufficient for the existence of a unique solution  $y(t)$  to the differential equation?
- A)  $f(t, y)$  is a contraction mapping.  
B)  $f(t, y)$  satisfies the Lipschitz condition in  $y$ .  
C)  $f(t, y)$  is continuous in  $t$  and differentiable in  $y$ .  
D)  $f(t, y)$  satisfies the Lipschitz condition in  $t$ .
109. Let  $T: M_{2 \times 2} \rightarrow R^2$  be defined by  $T[\{a, b\}, \{c, d\}] = (a+b, c-a)$  where  $\{a, b\}$  is the first row and  $\{c, d\}$  is the second row of the matrix. The dimensions of Range (T) and Kernel (T) is respectively given by:
- A) 2 and 4. B) 2 and 2.  
C) 4 and 2. D) 4 and 4.
110. Evaluate the limit of the function  $\frac{e^x - 1 - x}{x^2}$  as  $x$  approaches 0.
- A) 0 B) 1/2  
C) 1 D) Undefined.
111. The following system of equations has :
- $$2x + y - 3z = -10$$
- $$-2y + z = -2$$
- $$z = 6$$
- A) A unique solution. B) Infinite solutions.  
C) No solution D) Finite solutions.
112. Which of the following statements are true ?
1. Lagrange was the first to introduce the concept of principal curvature.
  2. Principal curvatures are the maximum and minimum normal curvatures at a point on a surface.
  3. Lines of curvature are curves such that at each point the tangent to the curve is along one of the principal directions.
  4. Euler is the inventor of non-Euclidean geometry and of the intrinsic differential geometry.
- A) 1 and 2 B) 2 and 3  
C) 1,2 and 3 D) 2,3 and 4.

113. Let  $X$  be a complete metric space. Which of the following statements is true according to the Baire Category Theorem?

- A) The union of countably many dense sets is dense in  $X$ .
- B) The intersection of countably open dense sets is empty.
- C) The intersection of countably open dense sets is dense in  $X$ .
- D) Every open set in  $X$  is dense.

114. Match the following concepts with their appropriate descriptions:

- |                            |  |
|----------------------------|--|
| 1) Rodrigues Formula       | i. Describes how the normal vector varies across a surface.  |
| 2) Gauss map               | ii. Provides a method for generating orthogonal polynomials.   |
| 3) Second Fundamental Form | iii. Relates the curvature of a curve at a point to the radius of the osculating circle at that point. |
| 4) Meusnier's Theorem      | iv. Describes the extrinsic geometry of a surface, capturing how it bends within the ambient space.    |

A) 1-i, 2-ii, 3-iv, 4-iii

B) 1-ii, 2-i, 3-iv, 4-iii

C) 1-iv, 2-iii, 3-i, 4-ii

D) 1-iii, 2-iv, 3-ii, 4-i

115. Consider a sequence of functions  $f_n(X)$  defined on a domain  $D$  and a sequence  $(M_n)$  such that  $\sum f_n(x) \leq M_n$  for all  $x \in D$  and  $n \in \mathbb{N}$ . Which of the following statements is true if  $\sum M_n$  is convergent?

- A)  $\sum f_n(x)$  is uniformly convergent on  $D$ .
- B)  $\sum f_n(x)$  is not necessarily uniformly convergent on  $D$ .
- C)  $\sum f_n(x)$  is pointwise convergent on  $D$ .
- D)  $\sum f_n(x)$  is absolutely convergent on  $D$ .

116. **Assertion (A)** : We can fit a polynomial of the second degree that passes through the two given data points

**Reason (R)** : Polynomial interpolation is the procedure of fitting a polynomial of degree  $n$  to a set of  $n$  data points.

Which of these is true?

- A) Both A and R are true and R is a correct explanation of A
- B) Both A and R are true but R is not a correct explanation of A
- C) A is true but R is false
- D) Both A and R are false

117. Which of the following is false for the rank of a matrix?

- A) Rank of a null matrix is zero
- B) Rank of a skew-symmetric matrix is 1
- C) Rank of the sum of 2 matrices is lesser than and equal to the sum of their respective ranks.
- D) Rank of the product of 2 matrices is lesser than and equal to the minimum of their respective ranks.

118. A two-dimensional heat equation has the form:

- A)  $\frac{\partial^2 u}{\partial t^2} = c^2 \frac{\partial^2 u}{\partial x^2}$
- B)  $\frac{\partial u}{\partial t} = c^2 \frac{\partial^2 u}{\partial x^2}$
- C)  $\frac{\partial^2 u}{\partial t^2} = c^2 \left( \frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} \right)$
- D)  $\frac{\partial u}{\partial t} = c^2 \left( \frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} \right)$

119. Which of the following is false for the integers a,b,c,d?

- A) If a divides (b+c) then either a divides b or a divides c.
- B) a divides b if and only if ac divides bc where  $c \neq 0$ .
- C) If a divides b then a divides bc.
- D) If a divides b and c divides d then ac divides bd.

120. If both  $(x_n)$  and  $(y_n)$  are unbounded sequences in  $\mathbb{R}$ , then the sequence  $(x_n y_n)$  cannot be convergent. Which of the following options is correct?

- A) The statement is True
- B) The statement is False
- C)  $(x_n y_n)$  converges only if  $(x_n)$  converges and  $(y_n)$  is bounded
- D) Nothing can be said

## ROUGH WORK



## ROUGH WORK



Booklet Serial No. 219481

Test Booklet Series

TEST BOOKLET  
PHYSICS

Written Test - 2023

(62)

A

Time Allowed: Two Hours

Maximum Marks: 120

INSTRUCTIONS

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test Booklet Series Code A, B, C or D carefully and without any omission or discrepancy at the appropriate places in the OMR Answer /Response Sheet. Any omission/discrepancy will render the Response Sheet liable for rejection.
3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside.  
  
**DO NOT write anything else** on the Test Booklet.
4. This Test booklet contains 120 items (questions). Each item comprises of four responses (answers). You will select the response which you want to mark on the Answer Sheet/Response Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
5. You have to mark all your responses **ONLY** on the separate Answer /Response Sheet provided. See directions in the Response Sheet.
6. All items carry equal marks.
7. Before you proceed to mark in the Answer /Response Sheet, the response to various items in the Test Booklet, you have to fill in some particulars in the Answer /Response Sheet as per instructions sent to you with your Admission Certificate.
8. After you have completed filling in all your responses on the Response Sheet and the examination has concluded, you should hand over to the Invigilator **only the Answer /Response Sheet**. You are permitted to take away with you the Test Booklet and **Candidate's Copy of the Response Sheet**.
9. Sheets for rough work are appended in the Test Booklet at the end.
10. While writing Centre, Subject and Roll No. on the top of the Answer Sheet/Response Sheet in appropriate boxes use **"ONLY BALL POINT PEN"**.
11. **Penalty for wrong answers:**  
**THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY THE CANDIDATE IN THE WRITTEN TEST (OBJECTIVE TYPE QUESTIONS PAPERS).**
  - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, (0.25) of the marks assigned to that question will be deducted as penalty.
  - (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above for that question.
  - (iii) If a question is left blank, i.e., no answer is given by the candidate, there will be **no penalty** for that question.



1. Considering the following Statement regarding the properties of the electric flux line
  1. If the negative charge is absent, the flux line terminates infinitely.
  2. The lines are parallel and never cross each other.
  3. It is a vector quantity.
  4. It depends on the material in which charges are placed.
 Select the correct answer using the codes below.
  - A) 1 and 2 only
  - B) 1 and 3 only
  - C) 2 and 4 only
  - D) 1,2,3 and 4
  
2. Find the force between two charges  $4C$  and  $-2C$  separated by a distance of  $2\text{ m}$  in the air (in Newton)
  - A)  $18 \times 10^9 N$
  - B)  $-18 \times 10^9 N$
  - C)  $24 \times 10^9 N$
  - D)  $-24 \times 10^9 N$
  
3. Consider the following statements:  
**Assertion (A):** Permittivity cannot be determined by Gauss's law  
**Reason (R):** Permittivity is constant for a particular matter (say for water  $=1$ )  
 The correct answer is
  - A) A and R are both correct and R is the correct explanation of A
  - B) A and R are both correct and R is NOT the correct explanation of A
  - C) A is correct, but R is NOT correct
  - D) A is NOT correct, but R is correct
  
4. Consider the following Statement given below:  
**Statement I:** The resultant magnetic momentum in an atom of the diamagnetic material is zero.  
**Statement II:** Lead, copper and bismuth are examples of diamagnetic materials  
 The correct answer is
  - A) Only Statement I is correct
  - B) Only Statement II is correct
  - C) Both Statement I and Statement II are correct
  - D) Neither Statement I nor Statement II are correct
  
5. If the force between two charges is  $100\text{ N}$ . If the distance between two charges is doubled, then the force will be
  - A)  $10\text{ N}$
  - B)  $25\text{ N}$
  - C)  $50\text{ N}$
  - D)  $75\text{ N}$



6. Find the magnetic field intensity (H) at the centre of a circular coil of diameter 2 m and carrying a current of 4A.
  - A) 10 A/m
  - B) 5 A/m
  - C) 2 A/m
  - D) 1 A/m
  
7. Consider the following Statement given below:  
**Statement I:** A dielectric material can be a good conductor  
**Statement II:** the charges in dielectrics are bound by finite charge (bound charge).  
 The correct answer is
  - A) Only Statement I is correct
  - B) Only Statement II is correct
  - C) Both Statement I and Statement II are correct
  - D) Neither Statement I nor Statement II are correct
  
8. For making a capacitor, it is better to select a dielectric having
  - A) High permittivity
  - B) Low permittivity
  - C) Permittivity more than air
  - D) Permittivity same as air
  
9. Calculate the inductance of a solenoid of 200 turns wound tightly on a cylinder tube of 6 cm diameter. The length of the tube is 60 cm and the solenoid is in air.
  - A) 0.5672mH
  - B) 0.3432mH
  - C) 0.7234mH
  - D) 0.2368mH
  
10. Which of the following is NOT related to the value of capacitance?
  - A) The permittivity of dielectric depend
  - B) The area of the cross-section of the plate
  - C) Charges between the plate
  - D) Distance of separation of plate
  
11. If a ball of mass 200g is dropped from three-storey building of height 15m with constant velocity, what is the net force acting on it?
  - A) Zero
  - B) 2 N
  - C) 3.5 N
  - D) 7 N

12. Consider the following statements:

**Assertion (A):** The distance between two masses increases, and the gravitational attraction increases.

**Reason (R):** Gravitational force is inversely proportional to square of their distance.

The correct answer is

- A) A and R are both correct and R is the correct explanation of A
- B) A and R are both correct and R is NOT the correct explanation of A
- C) A is correct, but R is NOT correct
- D) A is NOT correct, but R is correct

13. Consider the following Statement given below:

**Statement I:** Centre of mass is the point where mass distribution is uniform in all directions.

**Statement II:** Acceleration of the central mass of a system of particles is only due to external force.

The correct answer is

- A) Only Statement I is correct
- B) Only Statement II is correct
- C) Both Statement I and Statement II are correct
- D) Neither Statement I nor Statement II are correct

14. Determine the number of degrees of freedom in the bob of a simple pendulum oscillating in the plane.

- A) 1
- B) 2
- C) 3
- D) 4

15. Which of the following Statements is correct regarding the D'Alembert principle and Virtual work principle?

- A) Both deal with the statics of a system of particle
- B) Both deal with the motion of a system of particle
- C) One for motion and another for motion
- D) Have no meaning with each other

16. Acceleration for the Atwood machine when both masses ( $M_1$  and  $M_2$ ) hanged with string is
- A)  $a = (M_1 - M_2 / M_1 + M_2)g$
  - B)  $a = (M_1 + M_2 / M_1 - M_2)g$
  - C)  $a = (M_1 / M_1 + M_2)g$
  - D)  $a = (M_2 / M_1 + M_2)g$

17. Consider the following statements:

**Assertion (A):** The shortest distance between the point on the earth's surface is the arc of a great circle connecting the point.

**Reason (R):** The path traced is curved.

The correct answer is

- A) A and R are both correct and R is the correct explanation of A
  - B) A and R are both correct and R is NOT the correct explanation of A
  - C) A is correct, but R is NOT correct
  - D) A is NOT correct, but R is correct
18. If the lagrangian does not depend on time explicitly
- A) Potential energy is constant
  - B) Kinetic energy is constant
  - C) Hamiltonian is constant
  - D) None of above
19. Which of the following Statements regarding Kepler's law of planetary motion are correct?
- A) Every planet revolves around the sun in an elliptical orbit, the sun at one of the foci.
  - B) The square of the period of a planet's revolution around the sun is proportional to the cube of the semi-major axis of the elliptical orbit.
  - C) Both A and B
  - D) None of above
20. The maximum and minimum velocities of a satellite are  $V_1$  and  $V_2$ , respectively. The eccentricity of the orbit of the satellite is given by
- A)  $e = v_1 - v_2 / v_1 + v_2$
  - B)  $e = v_1 + v_2 / v_1 - v_2$
  - C)  $e = v_2 / v_1 + v_2$
  - D)  $e = v_1 / v_2$



21. Consider the following Statement given below:

**Statement I:** The Poisson bracket of two constants of motion is itself a constant of motion.

**Statement II:** Lagrange's bracket is invariant under canonical transformation.

The correct answer is

- A) Only Statement I is correct
  - B) Only Statement II is correct
  - C) Both Statement I and Statement II are correct
  - D) Neither Statement I nor Statement II are correct
22. Which of the following statement/s is/are correct regarding Rutherford's differential scattering cross section?
- A) Directly proportional to the square of the charge on the nucleus
  - B) Inversely proportional to square of its initial kinetic energy required
  - C) Both A and B
  - D) None of above
23. Consider the following Statement;
- 1. Entropy measures the number of possible microscopic arrangements corresponding to a macroscopic state.
  - 2. Partition Function is a crucial concept that relates thermodynamic properties to statistical properties.
- The correct statement/s is/are
- A) 1 only
  - B) 2 only
  - C) Both
  - D) Neither 1 nor 2
24. Consider the following statements related to Gibb's Paradox;
- 1. Gibbs' paradox addresses the apparent contradiction in the entropy change when identical particles are exchanged between two identical gas chambers.
  - 2. Gibbs' paradox challenges the classical statistical mechanics and suggests a resolution to maintain consistency with the second law of thermodynamics.
  - 3. The quantum mechanical treatment of identical particles solves Gibbs' paradox, explaining the observed entropy change.
- How many stamen/s is/are correct?
- A) Only one Statement
  - B) Only two statements
  - C) All three statements
  - D) No statement is correct
25. In Mean Field Theory, the interactions between particles are approximated by
- A) Modelling them as a collective field
  - B) Assuming they are always attractive
  - C) Considering them explicitly
  - D) Ignoring them



26. Landau's theory breaks down in the description of which of the quantum phenomena.
- Bose-Einstein condensation
  - Quantum entanglement
  - Quantum tunnelling
  - Fermi-Dirac statistics
27. In a Bose gas, the occupation number of a state can exceed one, leading to a macroscopic occupation of the ground state. What does it mean for a state to have a macroscopic occupation in a Bose gas?
- The state is not occupied at all
  - The state is occupied by a large number of particles
  - The state is unimportant in Bose gases
  - The state is occupied by only one particle
28. Blackbody radiation refers to the electromagnetic radiation emitted by a perfect blackbody, an idealized physical body that absorbs all incident electromagnetic radiation, regardless of frequency or angle of incidence. How many of the following is/are related to black body radiation?
- Planck's Law
  - Wien's Displacement Law
  - Stefan-Boltzmann Law
- The correct answer is
- Only one
  - Only two
  - All three
  - None correct
29. **Assertion (A):** The expected displacement of a particle in a one-dimensional random walk is zero after a large number of steps.  
**Reason (B):** In a random walk, the steps are equally likely to be in the positive or negative direction.
- The correct answer is
- A and R are both correct and R is the correct explanation of A
  - A and R are both correct and R is NOT the correct explanation of A
  - A is correct, but R is NOT correct
  - A is NOT correct, but R is correct
30. Consider the following Statement;
- Brownian motion is the random motion of particles in a fluid resulting from their collision with fast atoms or molecules.
  - The size of particles undergoing Brownian motion does not affect their displacement.
- The correct statement/s is/are
- 1 only
  - 2 only
  - Both
  - Neither

31. In a non-equilibrium process, which of the following statements is true?
- The system remains in a constant state
  - The system undergoes irreversible changes
  - The system is in thermodynamic equilibrium throughout
  - The system undergoes reversible changes
32. What boundary condition is commonly used in solving the diffusion equation for a semi-infinite medium?
- Dirichlet boundary condition
  - Cauchy boundary condition
  - Robin boundary condition
  - Neumann boundary condition
33. What is the steady-state solution of the one-dimensional diffusion equation?
- $C(x,t) = C_0 \exp(-Dt)$
  - $C(x,t) = C_0 \sin(\omega t)$
  - $C(x,t) = C_0$
  - $C(x,t) = C_0 e^{-x^2/4Dt}$
34. Which interpolation method is based on dividing the interval into smaller subintervals and fitting a lower-degree polynomial to each subinterval?
- Lagrange interpolation
  - Linear interpolation
  - Polynomial interpolation
  - Spline interpolation
35. Which of the following statements about extrapolation is true?
- Extrapolation is only useful for interpolating between known data points
  - Extrapolation can provide accurate predictions even when there is significant uncertainty
  - Extrapolation is not applicable in computational physics
  - Extrapolation always leads to exact solutions
- How many statement/s is/are correct?
- Only one Statement
  - Only two statements
  - Only three statements
  - All four statements are correct

36. Lagrange interpolation is particularly useful when:
- A) The degree of the polynomial needs to be minimized
  - B) The data points are evenly spaced
  - C) The data points are not evenly spaced
  - D) Linear interpolation is sufficient
37. The root mean square (RMS) value in physics represents:
- A) The square of the average value
  - B) The average of the squared values
  - C) The square root of the average of squared values
  - D) The average of the square root of values
38. The Bisection Method guarantees convergence to a root because:
- A) It always converges to the correct root
  - B) It reduces the interval size by a fixed factor in each iteration
  - C) It relies on advanced mathematical principles
  - D) It utilizes complex numbers to find roots
39. The error in the Trapezoidal Rule approximation typically decreases as:
- A)  $O(n)$
  - B)  $O(n^2)$
  - C)  $O(n^3)$
  - D)  $O(n^{-1})$
40. The Simpson's 1/3 Rule is a numerical integration method used for:
- A) Solving differential equations
  - B) Approximating definite integrals
  - C) Root-finding in algebraic equations
  - D) Simulating stochastic processes
41. In the context of the Runge-Kutta method, the "order" refers to:
- A) The highest degree of the polynomial used for interpolation
  - B) The number of equations in the system
  - C) The accuracy of the method, typically denoted by  $n$
  - D) The number of steps in the iteration



42. The convergence of the Newton-Raphson method is generally;
- Guaranteed for any initial guess
  - Slow and requires many iterations
  - Dependent on the linearity of the equation
  - Fast and quadratic for sufficiently close initial guesses
43. The Gauss Elimination method may encounter difficulties or fail when:
- The system has a unique solution
  - The system has no solution
  - The matrix is singular
  - The matrix is symmetric
44. Consider the following Statement;
- Quantum states can only be described using deterministic classical physics.
  - Quantum superposition allows a quantum system to exist in multiple states simultaneously.
- The correct statement/s is/are
- 1 only
  - 2 only
  - Both
  - Neither
45. Consider the following Statement;
- Electron spin is a form of orbital motion of the electron around the nucleus.
  - The Pauli Exclusion Principle is related to electron spin and states that no two electrons in an atom can have the same set of quantum numbers.
- The correct statement/s is/are
- 1 only
  - 2 only
  - Both
  - Neither
46. What is the maximum number of electrons occupying the 3p subshell in a one-electron atom?
- 2
  - 4
  - 6
  - 8



47. Which quantum number determines the shape of the electron's orbital?
- A) Principal quantum number ( $n$ )
  - B) Azimuthal quantum number ( $l$ )
  - C) Spin quantum number ( $s$ )
  - D) Magnetic quantum number ( $m$ )
48. What is the significance of the negative sign in the expression of energy levels in hydrogen?
- A) Indicates kinetic energy.
  - B) Indicates potential energy.
  - C) Indicates that energy is released when an electron moves to a lower energy level.
  - D) Indicates that energy is absorbed when an electron moves to a higher energy level.
49. Which of the following transitions is associated with hyperfine structure in atomic spectra?
- A) Transitions between vibrational energy levels
  - B) Transitions between electronic energy levels
  - C) Transitions between nuclear energy levels
  - D) Transitions between rotational energy levels
50. In the context of isotopic shifts, what role does the nucleus play in atomic spectra?
- 1. Influences electron spin
  - 2. Causes hyperfine splitting
  - 3. Modifies electronic energy levels
  - 4. Determines chemical reactivity
- How many role/s is/are correct?
- A) Only one role
  - B) Only two roles
  - C) Only three roles
  - D) All four roles
51. Which of the following mechanisms is responsible for the pressure broadening of spectral lines in gases?
- A) Van der Waals broadening
  - B) Doppler broadening
  - C) Stark broadening
  - D) Zeeman effect
52. In LS coupling, what is the total angular momentum quantum number  $J$  equal to?
- A)  $L + S$
  - B)  $L - S$
  - C)  $L + \frac{1}{2}$
  - D)  $|L - S|$

53. Which term describes a configuration in JJ coupling where  $J = |j_1 - j_2|$ ?
- Singlet
  - Doublet
  - Triplet
  - Quartet
54. What is the difference between the normal Zeeman effect and the anomalous Zeeman effect?
- The normal Zeeman effect involves electrons; anomalous involves protons.
  - The normal Zeeman effect occurs in atoms; anomalous occurs in molecules.
  - The normal Zeeman effect has no fine structure; anomalous has a fine structure.
  - The normal Zeeman effect involves zero spin angular momentum; anomalous involves atoms with spin angular momentum
55. Consider the following Statement;
- The Zeeman effect is splitting spectral lines in the presence of a magnetic field.
  - The Zeeman effect is caused by the interaction of magnetic moments associated with electrons' intrinsic angular momentum (spin) with an external magnetic field.
- The correct statement/s is/are
- 1 only
  - 2 only
  - Both
  - Neither
56. Consider the following statements:
- Assertion (A):** In X-ray spectroscopy, the energy of emitted X-rays depends on the electronic transitions occurring in the inner electron shells of atoms.
- Reason (R):** X-ray transitions involving inner electron shells result in the emission of characteristic X-rays with energies specific to the elements involved.
- The correct answer is
- A and R are both correct and R is the correct explanation of A
  - A and R are both correct and R is NOT the correct explanation of A
  - A is correct, but R is NOT correct
  - A is NOT correct, but R is correct
57. Consider the following statements regarding Electron Spin Resonance (ESR);
- ESR measures the absorption of electromagnetic radiation by electrons in a magnetic field.
  - ESR is specifically used for studying the magnetic properties of nuclei.
  - ESR requires the presence of a static magnetic field.
  - ESR applies only to molecules with unpaired electrons.
- The correct statements are;
- 1 and 3
  - 2 and 3
  - 1 and 4
  - 2 and 4

58. Consider the following statements regarding Nuclear Magnetic Resonance (NMR);

1. NMR relies on the detection of radiofrequency signals emitted by spinning atomic nuclei.
2. The strength of the static magnetic field in NMR affects the resonance frequency of the nuclei.
3. Chemical shifts in NMR spectra provide information about the local environment of nuclei in a molecule.
4. NMR is primarily applicable to molecules with unpaired electrons.

The correct statements are;

- A) 1,3 and 4
- B) 1,2 and 3
- C) 1,2 and 4
- D) 2,3 and 4

59. Consider the following statements:

**Assertion (A):** Chemical shift in NMR spectroscopy is influenced by the electron density around the nucleus.

**Reason (R):** The shielding effect caused by surrounding electron clouds results in different chemical shifts for nuclei in different molecular environments.

The correct answer is

- A) A and R are both correct and R is the correct explanation of A
- B) A and R are both correct and R is NOT the correct explanation of A
- C) A is correct, but R is NOT correct
- D) A is NOT correct, but R is correct

60. Consider the following statements:

**Assertion (A):** In Raman spectroscopy, the scattered light undergoes a frequency shift compared to the incident light.

**Reason (R):** The frequency shift in Raman spectra arises from the molecule's polarizability change.

The correct answer is

- A) A and R are both correct and R is the correct explanation of A
- B) A and R are both correct and R is NOT the correct explanation of A
- C) A is correct, but R is NOT correct
- D) A is NOT correct, but R is correct



61. Consider the following Statement;

1. The Franck-Condon principle applies to electronic transitions in molecules.
2. The Franck-Condon principle states that the nuclei remain at their equilibrium positions during electronic transitions.

The correct statement/s is/are

- A) 1 only
- B) 2 only
- C) Both
- D) Neither

62. Consider the following Statement related to the Einstein coefficient;

1. Spontaneous emission occurs when an atom transitions from a higher to a lower energy.
2. The B coefficient represents the probability of stimulated emission.

The correct statement/s is/are

- A) 1 only
- B) 2 only
- C) Both
- D) Neither

63. Consider the following Statement;

1. Bravais lattices are only applicable to metals.
2. There are 14 Bravais lattices in three dimensions.

The correct statement/s is/are

- A) 1 only
- B) 2 only
- C) Both
- D) Neither

64. Consider the following Statement regarding Reciprocal lattice;

1. The reciprocal lattice of a simple cubic lattice is also a simple cubic lattice.
2. The reciprocal lattice vectors are perpendicular to the corresponding direct lattice vectors.
3. The volume of the unit cell in the reciprocal lattice is the reciprocal of the volume of the unit cell in the direct lattice.

How many statement/s is/are correct?

- A) Only one Statement
- B) Only two statements
- C) All three statements
- D) No statement is correct



65. What does the magnitude of the structure factor indicate in X-ray crystallography?
- Atomic number of the crystal.
  - Electron density distribution in the crystal.
  - Crystal color.
  - Crystal temperature.
66. What does a structure factor of zero imply in X-ray crystallography?
- Maximum diffraction intensity.
  - Perfect crystal.
  - Amorphous structure.
  - Cancellation of diffraction contributions.
67. Consider the following statements:  
**Assertion (A):** Van der Waals forces play a significant role in bonding certain molecular solids.  
**Reason (R):** Van der Waals forces arise from temporary fluctuations in electron distribution and induce dipole moments in adjacent molecules, leading to attractive forces.  
 The correct answer is
- A and R are both correct and R is the correct explanation of A
  - A and R are both correct and R is NOT the correct explanation of A
  - A is correct, but R is NOT correct
  - A is NOT correct, but R is correct
68. Shear modulus characterizes a material's response to shear stress. What is the relationship between shear modulus (G), Young's modulus (E), and Poisson's ratio (V) in isotropic materials?
- $G = E / (2 * (1 + V))$
  - $G = E / (1 + V)$
  - $G = E / (1 - V)$
  - $G = E * (1 - V)$
69. Consider the following Statement regarding free electron theory;
- The presence of impurities is the primary factor determining electrical conductivity in metals
  - Fermi-Dirac energy distribution is assumed for electrons in the free electron theory
  - The Pauli Exclusion Principle plays a crucial role in the free electron theory by limiting the occupancy of electron states.
- How many statement/s is/are correct?
- Only one Statement
  - Only two statements
  - All three statements
  - No statement is correct

70. In insulators, the electronic specific heat is typically characterized by an exponential increase with decreasing temperature due to the energy bandgap.

What role does the energy bandgap play in determining the electronic-specific heat in insulators?

- A) It causes a decrease in specific heat at low temperatures.
- B) It leads to a linear temperature dependence.
- C) It results in an exponential increase in specific heat at low temperatures.
- D) It has no significant effect on specific heat.

71. Consider the following Statement;

- 1. Drude model assumes that electrons in a metal experience frequent collisions with the lattice ions, leading to a relaxation time.
- 2. Drude model fails to account for electron-electron interactions, particularly at low temperatures.

The correct statement/s is/are

- A) 1 only
- B) 2 only
- C) Both
- D) Neither

72. The Hall voltage produced in a Hall effect experiment is directly proportional to the product of the magnetic field strength, current, and a material-dependent parameter called the Hall coefficient. How is the Hall coefficient defined in the context of the Hall effect?

- A) The ratio of Hall voltage to magnetic field strength
- B) The ratio of charge to mass of charge carriers
- C) The ratio of transverse voltage to current
- D) The ratio of electric field to current

73. Thermoelectric power has practical applications in devices like thermoelectric generators and thermoelectric coolers. What is the potential application of thermoelectric power in devices?

- A) Generating X-rays
- B) Generating sound waves
- C) Powering electronic devices
- D) Generating mechanical motion

74. Consider the following statements:

**Assertion (A):** Diamagnetism is a property exhibited by materials not attracted to a magnetic field.

**Reason (R):** In diamagnetic materials, the magnetic moments of individual atoms or molecules align with an external magnetic field.

The correct answer is

- A) A and R are both correct and R is the correct explanation of A
- B) A and R are both correct and R is NOT the correct explanation of A
- C) A is correct, but R is NOT correct
- D) A is NOT correct, but R is correct

75. What is the hysteresis loop used to represent in ferromagnetic materials?

- A) Magnetic permeability changes
- B) Temperature changes
- C) Magnetization and demagnetization processes
- D) Electrical conductivity changes

76. What is the Fermi level in the context of the Band Theory in a metal?

- A) The level where Fermi's birthday is celebrated.
- B) Electrons occupy the highest energy level at absolute zero.
- C) A level used for storing grains.
- D) Electrons occupy the lowest energy level.

77. Consider the following statements:

**Assertion (A):** Doping with pentavalent impurities decreases the conductivity of a semiconductor.

**Reason (R):** Pentavalent impurities introduce free electrons into the semiconductor crystal lattice.

The correct answer is

- A) A and R are both correct and R is the correct explanation of A
- B) A and R are both correct and R is NOT the correct explanation of A
- C) A is correct, but R is NOT correct
- D) A is NOT correct, but R is correct

78. What is the Meissner effect in superconductors?

- A) Zero resistance
- B) Expulsion of magnetic fields from the interior
- C) Superconductivity at room temperature
- D) High resistance



79. Consider the following Statement;

1. A device based on the Josephson effect is used for extremely sensitive magnetic field measurements.
2. The critical current is when a Josephson junction switches from supercurrent to normal state.

The correct statement/s is/are

- A) 1 only
- B) 2 only
- C) Both
- D) Neither

80. What is the director in the context of liquid crystals?

- A) A person directing the synthesis.
- B) The alignment of molecules in a liquid crystal.
- C) A phase transition in liquid crystals.
- D) A device used to measure liquid crystal properties.

81. What is the defining characteristic of a Penrose tiling?

- A) Repeating hexagonal pattern.
- B) Aperiodic, non-repeating pattern.
- C) Square lattice.
- D) Spiral arrangement.

82. What is a beta decay in nuclear physics?

- A) Emission of an electron.
- B) Absorption of a neutron.
- C) Fusion of two nuclei.
- D) Emission of an alpha particle.

83. Consider the following Statement regarding the Liquid Drop Model;

1. Nucleons behave like a liquid drop is the primary assumption.
2. Strong nuclear force causes the surface tension of the nucleus.
3. Volume energy explains the existence of nuclear binding energy.

How many statement/s is/are correct?

- A) Only one Statement
- B) Only two statements
- C) All three statements
- D) No statement is correct



84. Consider the following Statement;

1. Magnetic quantum number ( $m$ ) is the primary quantum number associated with rotational spectra.
2.  $\Delta v = \pm 1$  is the selection rule for rotational transitions in a diatomic molecule.

The correct statements are

- A) 1 only
- B) 2 only
- C) Both
- D) Neither 1 nor 2

85. Consider the following Statement;

1. Isospin is denoted mathematically as  $I = 1/2$
2. The isospin quantum number ( $I$ ) relate to the number of nucleon isospin states as  $2I+1$

The correct statement/s is/are

- A) 1 only
- B) 2 only
- C) Both
- D) Neither

86. Consider the following Statement;

1. According to the Gell-Mann-Nishijima formula,  $+1/2$  is the electric charge of a particle with  $I_3 = 0$  and  $Y = 1/2$
2. A proton is an example of a baryon according to the Gell-Mann-Nishijima formula.

The correct statement/s is/are

- A) 1 only
- B) 2 only
- C) Both
- D) Neither 1 nor 2

87. In the context of special functions, what is the relation between Legendre polynomials and Legendre functions of the first kind?

- A) They are identical.
- B) Legendre functions are derivatives of Legendre polynomials.
- C) Legendre polynomials are solutions to Legendre functions.
- D) There is no specific relation.

88. The Laplace transform of the impulse function  $\delta(t)$  is:

- A) 1
- B) 0
- C)  $\infty$
- D) Not Defined

89. What is the name of a pure semiconductor crystal in which current flows owing to the breaking of crystal bonds?

- A) Extrinsic Semiconductor
- B) Intrinsic Semiconductor
- C) Both (A) and (B)
- D) None of the above

90. For a function  $f(z)$  that is analytic inside and on a simple closed contour  $C$ , and for any point  $z_0$  inside  $C$ , Cauchy's Integral Formula is given by:

$$f(z_0) = \frac{1}{2\pi i} \oint_C \frac{f(z)}{z - z_0} dz$$

Which of the following statements about Cauchy's Integral Formula is correct?

- A) The function  $f(z)$  must be continuous on and inside the contour  $C$ .
- B) The contour  $C$  must be clockwise oriented.
- C) Cauchy's Integral Formula is applicable only to functions with simple poles.
- D) The function  $f(z)$  must be real-valued on and inside the contour  $C$ .

91. Considering the following Statement regarding applications of Fourier Series;

1. Analyses the functions such as saw waves which are periodic signals in experimentation.
2. Provides an analytical approach to solve the discontinuity problem.
3. In calculus, this helps in solving complex differential equations.

The correct statements are,

- A) 1 and 2 only
- B) 1 and 3 only
- C) 1, 2 and 3
- D) None of the above

92. Using orthogonality of the roots of a Bessel function of the first kind gives a so-called
- Bessel series
  - Fourier series
  - Laguerre series
  - Fourier- Bessel series
93. Consider the following statements:
- Assertion (A):** Bohr's Principle of Complementarity is required to understand the Wave-Particle duality.
- Reason (R):** Bragg's reflections prove de-Broglie's postulate.
- The correct answer is
- A and R are both correct and R is the correct explanation of A
  - A and R are both correct and R is NOT the correct explanation of A
  - A is correct, but R is NOT correct
  - A is NOT correct, but R is correct
94. Consider the following statements regarding Gibb's Phenomenon:
- Statement I:** It is typical for the Fourier series, orthogonal polynomials, splines, and wavelets.
- Statement II:** It appears in many scientific problems but cannot be used in signal and image processing.
- The correct answer is
- Only Statement I is correct
  - Only Statement II is correct
  - Both Statement I and Statement II are correct
  - Neither Statement I nor Statement II are correct
95. Who among the following is not a France - mathematician?
- Jean Baptiste Joseph Fourier
  - Pierre-Simon Laplace
  - Augustin Louis Couchy
  - Georg Friedrich Bernhard Riemann
96.  $F = m \times a$  represents which of the following?
- Law of inertia
  - Law of force
  - Law of Action and reaction
  - Law of reflection

97. Consider the following Statement given below:

**Statement I:** According to Fourier Transforms waveforms comprise a discrete range of frequencies.

**Statement II:** TV signals, cell phone signals, and sound waves that travel when you speak are classic examples of Fourier transforms.

The correct answer is

- A) Only Statement I is correct
- B) Only Statement II is correct
- C) Both Statement I and Statement II are correct
- D) Neither Statement I nor Statement II are correct

98. The product of the mass of a particle and its velocity is

- A) Momentum
- B) Acceleration
- C) Impulse
- D) Inertia

99. The following statements represent the applications of which of the options given below?

- 1. Anthropologists and archaeologists can discover hidden information about the ancient artifacts and the remains they find by analyzing them.
- 2. It helps astrophysicists learn more about how objects in space work.

The correct answer is

- A) Astrophysics
- B) X-ray spectroscopy
- C) X-ray crystallography
- D) X-ray radiography

100. Which of the following Statement is false regarding the quasicrystal

- A) Contain an ordered structure
- B) Recur at precisely regular intervals
- C) Found in alloys of aluminium with such metals as iron, cobalt, or nickel.
- D) None of the above



101. The process when a particle experiences circular motion due to a homogeneous magnetic field is known as?

- A) Cyclotron resonance
- B) Cyclotron frequency
- C) Magnetic resonance
- D) Magnetic frequency

102. Consider the following statements:

**Assertion (A):** When an atom is unstable or is bombarded with high-energy particles, its electrons transition from one energy level to another.

**Reason (R):** X-ray spectroscopy measures those energy changes, which allows scientists to identify elements and understand how the atoms within various materials interact.

The correct answer is

- A) A and R are both correct and R is the correct explanation of A
- B) A and R are both correct and R is NOT the correct explanation of A
- C) A is correct, but R is NOT correct
- D) A is NOT correct, but R is correct

103. Consider the following Statement given below:

**Statement I:** It is affected by changes in temperature.

**Statement II:** Diamagnetism is observable in substances with asymmetric electronic structures.

The correct answer is

- A) Only Statement I is correct
- B) Only Statement II is correct
- C) Both Statement I and Statement II are correct
- D) Neither Statement I nor Statement II are correct

104. Nobel Prize in Physics was awarded for experimental methods to study electron dynamics in matter that requires pulses of light in

- A) Nanoseconds
- B) Attosecond
- C) Femtosecond
- D) Picosecond

105. Femtosecond pulses have enabled scientists to observe the processes happening at

- A) Atomic level
- B) Subatomic level
- C) Molecular level
- D) None of the above

106. Subatomic particles refer to

- A) Quarks
- B) Electrons
- C) Neither A nor B
- D) Both A and B

107. Consider the following statements regarding neutrinos

**Assertion (A):** They do not exist within atoms like electrons do but play a crucial role in certain types of radioactive decay.

**Reason (R):** In a type of radioactivity known as beta decay, a neutron changes into a proton.

The correct answer is

- A) A and R are both correct and R is the correct explanation of A
- B) A and R are both correct and R is NOT the correct explanation of A
- C) A is correct, but R is NOT correct
- D) A is NOT correct, but R is correct

108. Consider the following statements regarding spin;

- 1) Fermions possess the integer value 0,1,2,...etc
- 2) Bosons possess half-integer values  $1/2, 3/2, \dots$  etc

The correct statement/s is/are

- A) 1 only
- B) 2 only
- C) Both 1 and 2
- D) Neither 1 nor 2

**109.** Consider the following statements;

1. Quarks and leptons are the building blocks of matter.
2. The five types of forces bind them together.

The correct statement/s is/are

- A) 1 only
- B) 2 only
- C) Both 1 and 2
- D) Neither

**110.** The following statements best describe which of those given below;

1. They are a special type of semiconductor device.
2. They have the size of a manometer.
3. LED is an electrical gadget that uses light.

The correct answer is

- A) Superconductor
- B) Photodetectors
- C) Optoelectronic device
- D) Operational amplifiers

**111.** An idealised object that absorbs all the electromagnetic radiation it comes in contact with it is

- A) Non-ionising radiation
- B) Beta radiation
- C) Blackbody radiation
- D) Neutron radiation

112. Identify the INCORRECT pair;

|    | Equations    | Explains                        |
|----|--------------|---------------------------------|
| 1. | Klein Gordan | Scalar particles                |
| 2. | Schrodinger  | Classical Mechanics             |
| 3. | Dirac        | Magnetic moment of electron     |
| 4. | Poisson      | Static electricity of an object |

The answer is

- A) 1 only
- B) 1 and 2
- C) 1,2 and 3
- D) None of the above

113. Consider the following statements;

- 1. Lagrange's equation of motion describes the motion of a particle in terms of a single second-order differential equation.
- 2. Hamilton's equations describe the motion of a particle in terms of a coupled system of two first-order differential equations.

The correct statement/s is/are

- A) 1 only
- B) 2 only
- C) Both 1 and 2
- D) Neither 1 nor 2

114. d'Alembert force is otherwise known as?

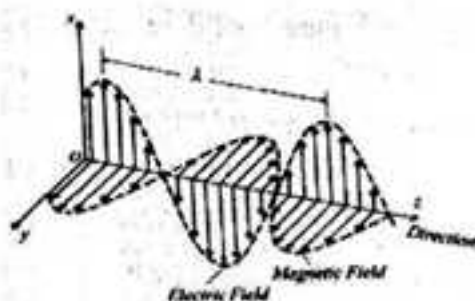
- A) Fictitious force
- B) Pseudo force
- C) A and B
- D) None of the above

115.  $I = mr^2$  explains about?

- A) Moment of Inertia of Hoop
- B) Moment of inertia of Rod
- C) Moment of inertia of cylinder
- D) Moment of inertia of square



116. The below picture depicts which of the following concepts?



- A) Electromagnetic propagation in free space
- B) Electromagnetic propagation in solid materials
- C) Both A and B
- D) Neither of the above

117. The force that tends the heavy nucleus to occupy certain orbitals in the shell structure is

- A) Force of Buoyancy
- B) Coulomb Force
- C) Gravitational force
- D) Tensional force

118. The nucleus's way of dropping a higher energy level to lower energy level through the emission of high-energy photons is known as

- A) Alpha decay
- B) Gamma decay
- C) Beta decay
- D) None of the above

119. Which of the following is/are true regarding the Band Theory of Metals?

- 1) In Conductors, the electrons in the valence band are separated by a large gap from the conduction band.
- 2) In Insulators, the valence band overlaps the conduction band.
- 3) In semiconductors, there is a small enough gap between the valence and conduction bands that thermal

The correct statements is/are

- |            |            |
|------------|------------|
| A) 1 and 2 | B) 1 and 3 |
| C) 2 only  | D) 3 only  |

120. Consider the following statements and choose the correct one using the codes given below;

**Assertion (A):** The intrinsic kind of semiconductor is pure, but the extrinsic type contains impurities to make it conductive.

**Reason (R):** At ambient temperature, intrinsic conductivity will be nil, but extrinsic conductivity will be minimal.

The correct answer is

- A) A and R are both correct and R is the correct explanation of A
  - B) A and R are both correct and R is NOT the correct explanation of A
  - C) A is correct, but R is NOT correct
  - D) A is NOT correct, but R is correct
-

## ROUGH WORK

## ROUGH WORK



## ROUGH WORK

EAL

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**Test Booklet Series**

**TEST BOOKLET  
NUTRITION**

**Written Test - 2023**

**(61)**

**A**

**Time Allowed: Two Hours**

**Maximum Marks: 120**

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2. Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test Booklet Series Code A, B, C or D carefully and without any omission or discrepancy at the appropriate places in the OMR Answer /Response Sheet. Any omission/discrepancy will render the Response Sheet liable for rejection.
3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside.  
**DO NOT write anything else** on the Test Booklet.
4. This Test booklet contains **120** items (questions). Each item comprises of four responses (answers). You will select the response which you want to mark on the Answer Sheet/Response Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
5. You have to mark all your responses **ONLY** on the separate Answer /Response Sheet provided. See directions in the Response Sheet.
6. All items carry equal marks.
7. Before you proceed to mark in the Answer /Response Sheet, the response to various items in the Test Booklet, you have to fill in some particulars in the Answer /Response Sheet as per instructions sent to you with your Admission Certificate.
8. After you have completed filling in all your responses on the Response Sheet and the examination has concluded, you should hand over to the Invigilator **only the Answer /Response Sheet**. You are permitted to take away with you the Test Booklet and **Candidate's Copy of the Response Sheet**.
9. Sheets for rough work are appended in the Test Booklet at the end.
10. While writing Centre, Subject and Roll No. on the top of the Answer Sheet/Response Sheet in appropriate boxes use **"ONLY BALL POINT PEN"**.
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**THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY THE CANDIDATE IN THE WRITTEN TEST (OBJECTIVE TYPE QUESTIONS PAPERS).**
  - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **(0.25)** of the marks assigned to that question will be deducted as penalty.
  - (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above for that question.
  - (iii) If a question is left blank, i.e., no answer is given by the candidate, there will be **no penalty** for that question.

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**(61) (A)/2023**

**[P.T.O.]**



1. Bacteria causing Pneumonia is

- A) Rod -shaped
- C) Spiral

- B) Spherical
- D) Comma-shaped

2. Match the pairs

**Column A**

- 1. Benzoic acid
- 2. Propionic acid

- 3. Sorbic acid
- 4. Nisin

- A) 1-IV, 2-III, 3-II, 4-I
- C) 1-IV, 2-III, 3-I, 4-II

**Column B**

- I. Preservation of cheese
- II. Fruit preserves and Confectionary

- III. Bread making
- IV. Fruit beverages

- B) 1-III, 2-IV, 3-I, 4-II
- D) 1-IV, 2-I, 3-III, 4-II

3. Objectives of Moisture Sorption Isotherm

- A) For food concentration and dehydration processes
- B) Formulating food mixtures to avoid water transfer among ingredients
- C) Determine moisture barrier properties needed in packaging material
- D) All of these

4. Sugar unit joined by glycosidic bond in oligosaccharides

- A) 2-20
- C) 30-40

- B) 20-30
- D) 40-50

5. Which of the following can be repeatedly use to make products, and at the end, to have a product free of enzyme

- A) Natural Yeast
- B) Immobilized enzymes
- C) Enzymes
- D) All of these

6. Lactose converted to lactic acid

- A) Leuconostoc
- C) Lactobacilli

- B) Streptococcus lactis
- D) Both B and C

7. On cooling, starch molecules partially reassociate to form a precipitate or gel in the processes of

- A) Retrogradation
- C) Syneresis

- B) Gelatinization
- D) Hydrolysis

8. Food processing with prevention of entry of micro organism

- A) Asepsis
- C) Low temperature

- B) High temperature
- D) Antimicrobials

(61) (A)

(3)

[P.T.O.]



9. Milk protein and sugar are  
 A) Gluten and dextrin  
 B) Zein and fructose  
 C) Albumin and glucose  
 D) Casein and lactose
10. Study which deals with the composition, structure and properties of foods  
 A) Food science  
 B) Food microbiology  
 C) Food processing  
 D) Food chemistry
11. Match the pairs  
**Column A [product]**  
 1. Fruit syrup  
 2. Squash  
 3. Cordial  
 4. Jam  
 A) 1-II, 2-I, 3-IV, 4-III  
 C) 1-IV, 2-III, 3-II, 4-I
- Column B [TSS]**  
 I. 40°brix  
 II. 65°brix  
 III. 68°brix  
 IV. 30°brix  
 B) 1-I, 2-II, 3-III, 4-IV  
 D) 1-I, 2-IV, 3-II, 4-IV
12. Structural unit of Proteins  
 A) Amino acids  
 B) Fatty acids  
 C) Saccharides  
 D) Nitrogen
13. Red Seaweeds is the source of  
 A) Guar gum  
 B) Xanthan gum  
 C) Carrageenans  
 D) Beta-glucan
14. Defect 'Springer' is found in which of the following  
 A) Freezing  
 B) Evaporation  
 C) Canning  
 D) Pasteurization
15. Which mineral in Milk present in high amount  
 A) Calcium  
 B) Phosphorus  
 C) Iron  
 D) Vitamin A
16. Which of the following grow on the surface of high acid and salt containing products  
 A) Yeast  
 B) Molds  
 C) Bacteria  
 D) Virus
17. Food stored and packed under aseptic conditions in UHT Sterilization at  
 A) 121°C - 15 mins  
 B) 135°C - 2 secs  
 C) 63°C - 30 mins  
 D) 121°C - 2 secs

18. Raw and clarified milk concentrated in vacuum pan at 74-77°C and fortified with vit.D while homogenized, sterilized in cans at 118°C for 15 mins followed by cooling is
- |                    |             |
|--------------------|-------------|
| A) Skim milk       | B) UHT milk |
| C) Evaporated milk | D) Dry milk |
19. Water- insoluble pigment is
- |                 |                  |
|-----------------|------------------|
| A) Anthocyanins | B) Chlorophyll   |
| C) Betalins     | D) Anthoxanthins |
20. Which of the following is not the component of refrigeration system
- |               |                    |
|---------------|--------------------|
| A) Compressor | B) Vacuum chamber  |
| C) Condenser  | D) Expansion valve |
21. Gas used for hastening ripening accompanying color development of fruits
- |                   |                    |
|-------------------|--------------------|
| A) Carbon dioxide | B) Oxygen          |
| C) Ethylene       | D) Sulphur dioxide |
22. 9-Hexadecenoic is the systematic name of
- |                           |                                |
|---------------------------|--------------------------------|
| A) Fatty acid             | B) Saturated fatty acid        |
| C) Unsaturated fatty acid | D) Poly-unsaturated fatty acid |
23. Which of the following is not correct in sterilization
- |  |
|--|
| A) Complete destruction of microorganism |
| B) Normally used for vegetables          |
| C) Steam can be used for sterilization   |
| D) Temperature below 100°C               |
24. In canning, the temperature during sealing should not fall below
- |         |         |
|---------|---------|
| A) 72°C | B) 74°C |
| C) 76°C | D) 78°C |
25. Percent fat in Buffalo : Cow is
- |                |                |
|----------------|----------------|
| A) 7.44 : 3.66 | B) 3.66 : 7.44 |
| C) 5.44 : 5.66 | D) 5.66 : 5.44 |

26. Crystalline structure and behavior of fats studied by
- |                          |                               |
|--------------------------|-------------------------------|
| A) X-ray diffraction     | B) Magnetic resonance imaging |
| C) Infrared spectroscopy | D) All of these               |
27. Sugar concentration of condensed milk
- |        |        |
|--------|--------|
| A) 45% | B) 55% |
| C) 65% | D) 75% |
28. Which of the following is precursor of Vitamin A
- |                   |                   |
|-------------------|-------------------|
| A) Chlorophyll- a | B) Anthocyanins   |
| C) Betalains      | D) Beta- carotene |
29. Temperature for HTST method is
- |                 |                 |
|-----------------|-----------------|
| A) 63°C -30mins | B) 72°C- 15sec  |
| C) 118°C-15mins | D) 135°C- 2 sec |
30. Yeast *saccharomyces cerevisiae* and *saccharomyces ellipsoideus* responsible to convert
- |                           |                           |
|---------------------------|---------------------------|
| A) Alcohol to acetic acid | B) Lactose to lactic acid |
| C) Sugar to alcohol       | D) Glucose to fructose    |
31. Microbial growth is measure in
- |                    |                    |
|--------------------|--------------------|
| A) Organism count  | B) Cell number     |
| C) Organism number | D) Microbial count |
32. Select appropriate steps in cheese preparation
- |   |
|---|
| A) Curd- cheddaring- salting curd- pressing- ripening |
| B) Cheddaring- salting curd- curd- ripening- pressing |
| C) Cheddaring- pressing -ripening- salting cur- curd  |
| D) Curd- pressing- salting curd- cheddaring-ripening  |
33. Freeze-driers are the type of which of the following
- |                  |                           |
|------------------|---------------------------|
| A) Vacuum driers | B) Drum driers            |
| C) Roller driers | D) Air- convection driers |
- (61) (A) (6)

34. Starch is
- |                          |                            |
|--------------------------|----------------------------|
| A) Gliadin and glutenin  | B) Glucose and fructose    |
| C) Glucose and galactose | D) Amylose and amylopectin |
35. Conching is the processing step of
- |          |              |
|----------|--------------|
| A) Cocoa | B) Chocolate |
| C) Tea   | D) Coffee    |
36. Botulism is caused by
- |                          |                            |
|--------------------------|----------------------------|
| A) Staphylococcus Aureus | B) Bacillus cereus         |
| C) Clostridium botulinum | D) Clostridium perfringens |
37. Average Size of fat globule of homogenized milk is
- |              |              |
|--------------|--------------|
| A) 2 $\mu$ m | B) 4 $\mu$ m |
| C) 6 $\mu$ m | D) 8 $\mu$ m |
38. Name the heating method of foods where low –frequency alternating current of 50-60Hz is combined with special electrodes
- |                         |                  |
|-------------------------|------------------|
| A) Microwave heating    | B) Ohmic heating |
| C) Pulse electric field | D) Canning       |
39. Liquid nitrogen and CO<sub>2</sub> is used for
- |                  |                          |
|------------------|--------------------------|
| A) Belt freezer  | B) Fluidized bed freezer |
| C) Blast freezer | D) Immersion freezer     |
40. In lipids, the reaction with molecular oxygen through a self-catalytic mechanism is
- |                  |                 |
|------------------|-----------------|
| A) Hydrolysis    | B) Autoxidation |
| C) Hydrogenation | D) Lipolysis    |
41. Which of the following is the measure of the capacity of a heat treatment to sterilize
- |            |            |
|------------|------------|
| A) F value | B) Z value |
| C) D value | D) E value |
42. Microwave generator is
- |               |               |
|---------------|---------------|
| A) Compressor | B) Magnetron  |
| C) Condenser  | D) Evaporator |
43. Which of the following is correct for Intermediate- moisture foods
- |                           |                         |
|---------------------------|-------------------------|
| A) Required refrigeration | B) Semi-dry foods       |
| C) 20-50% moisture        | D) No dissolved solutes |



44. Microorganism respire both aerobically and anaerobically  
 A) Anaerobes B) Aerobes  
 C) Saprophytic D) Facultative
45. Match the pairs of protein type with its functions
- | Column A                   | Column B                  |
|----------------------------|---------------------------|
| 1. Whey protein            | I. elasticity             |
| 2. Egg protein             | II. viscosity             |
| 3. Cereal protein          | III. solubility           |
| 4. Gelatin                 | IV. foaming               |
| A) 1-IV, 2-II, 3-I, IV-III | B) 1-III, 2-IV, 3-I, 4-II |
| C) 1-II, 2-I, 3-IV, 4-III  | D) 1-I, 2-II, 3-III, 4-IV |
46. Which of the sequence is correct for use of enzyme in food processing  
 a-amylaseglucoamylase glucose isomerase  
 A) Starch → dextrins → glucose → fructose  
     glucoamylase a-amylase glucose isomerase  
 B) Starch → dextrins → glucose → fructose  
     Glucose isomeraseglucoamylase a- amylase  
 C) Starch → dextrins → glucose → fructose  
     a-amylaseglucose isomeraceglucoseamylase  
 D) Starch → dextrins → glucose → fructose
47. Steps omitted in green tea processing  
 A) Steaming B) Rolling  
 C) Drying D) Withering and fermentation
48. UHT stands for  
 A) Ultimate high temperature B) Ultra highest temperature  
 C) Unit high temperature D) Ultra high temperature
49. Vaccum evaporators also called  
 A) Flash evaporator  
 B) Multiple-effect vaccum evaporator  
 C) Freeze concentration  
 D) Reverse osmosis

50. In which of the phase there is no microbial growth  
A) Exponential phase  
B) Stationary phase  
C) Death phase  
D) Lag phase
51. The terms  $\Delta H$  and  $\Delta G$  are the values of  
A) Thermodynamics of protein denaturation  
B) Thermodynamics of lipids  
C) Thermodynamics of Carbohydrates  
D) Thermodynamics of minerals
52. What is the boiling point of Liquid Nitrogen for freezing  
A)  $-79^{\circ}\text{C}$   
B)  $-18^{\circ}\text{C}$   
C)  $-196^{\circ}\text{C}$   
D)  $-97^{\circ}\text{C}$
53. MA storage for apples is  
A) 3% oxygen, 3% carbon dioxide  
B) 6% oxygen, 6% carbon dioxide  
C) 9% oxygen, 9% carbon dioxide  
D) 12% oxygen, 12% carbon dioxide
54. Prolong cooking process for vegetables change the chlorophyll color from green to  
A) Yellow  
B) Aqua green  
C) Olive green  
D) Light green
55. Patulin toxin produced by  
A) *Claviceps purpurea*  
B) *Penicillium* species  
C) *Aspergillus flavus*  
D) *Aspergillus parasiticus*
56. Correct sequence of Pectic substance in fruits during ripening process  
A) Pectic acid- pectin-pectinic acid- protopectin  
B) Protopectin- pectinic acid- pectin- pectic acid  
C) Pectin – pectic acid- pectinic acid- protopectin  
D) Pectic acid- pectinic acid- protopectin- pectin
57. An alkaloid substance producing the stimulating property  
A) Caffeine  
B) Chicory  
C) Coffee beans  
D) Furan
58. Name the method where liquid or air used as heating medium  
A) Conduction  
B) Convection  
C) Radiation  
D) Microwave

59. Match the pairs

**Column A**

1. Ice cream
2. Cheddar cheese
3. Skimmed milk
4. Toned milk

**Column B**

- I. 8.5 SNF
- II. Over run
- III. Lactobacillus lactis
- IV. Fat remove

- A) 1-II, 2-III, 3-IV, 4-I  
C) 1-IV, 2-III, 3-II, 4-I

- B) 1-I, 2-II, 3-III, 4-IV  
D) 1-II, 2-I, 3-IV, 4-III

60. Growth of organism producing slime on the surface of Meat is

- A) Pseudomonas                      B) Leuconostoc  
C) Clostridium                        D) Proteus

61. Oat milling is a major cereal industry for the production of .....

- A) Baked goods  
B) Breakfast cereals  
C) Malted beverage  
D) Baked goods and malted beverage

62. In the process of Milling of Wheat it is tempered before grinding by treating with water because.....

- A) Endosperm will be tough and readily separated from the bran.  
B) Bran will be tough and readily separated from the endosperm  
C) This Practice is followed traditionally  
D) None of the above

63. A machine which removes surface moisture from grain after washing by centrifugal force and impact is called.....

- A) Hammermill                      B) Ball mill  
C) Whizzer                            D) Degermer

64. In which order the components of the mixture in column chromatography are always eluted?

- A) Increasing polarity and decreasing distribution ratio  
B) Increasing polarity and increasing distribution ratio  
C) Decreasing polarity and increasing distribution ratio  
D) Decreasing polarity and decreasing distribution ratio



65. The characteristic flaky structure of cream cracker produced after baking is result of .....  
A) Lamination of dough  
B) Relaxation of dough  
C) Kneading of the dough  
D) Both (B) and (C)
66. ....confirmed the existence of granular structure in paneer and also exhibited the internal structure of the protein particles.  
A) Transmission Electron microscopy: (TEM)  
B) Scanning electron microscopy (SEM)  
C) Fluorescence microscopy  
D) Compound microscopy
67. FPO stands for .....  
A) Fruit Production Operation  
B) Fruit Product Order  
C) Flavor Production Office  
D) Fruit Procurement Order
68. The shortening used in making cake undergoes beating process in order to.....  
A) Decrease its volume  
B) Entrap air into it  
C) Change its color  
D) Release air from it
69. What is the number of principle of HACCP?  
A) 5  
B) 7  
C) 9  
D) 11
70. Which BIS standard is compulsory for packaged drinking water?  
A) IS 14243  
B) IS 13543  
C) IS 14543  
D) IS 14534
71. Composition of endosperm, bran and germ in wheat (in%) is approximately....  
A) 82,14,4  
B) 75, 10,15  
C) 85, 12, 3  
D) 80, 5,15
72. The .....is an instrument for measuring texture through tension and compression testing within the force range of <1N to 5kN.  
A) Instron universal machine  
B) The Ottawa Texture Measuring System  
C) General Foods Texturometer  
D) Kramer Shear Press



73. 4. Bread flour is typically made of .....
- A) Soft wheat
  - B) Hard wheat
  - C) Hard and soft wheat blend
  - D) Medium hard wheat
74. The statistical method, PCA, used in sensory science stands for.....
- A) Principal Component Average
  - B) Principal Cumulative Analysis
  - C) Principal Component Analysis
  - D) Principal Cumulative average
75. For packaging of spinach, cauliflower and sweet potato which type of can is used?
- A) AR cans
  - B) SR cans
  - C) Plain
  - D) Both (A) and (B)
76. Which element plays a significant role in human cell-mediated immunity and is also an antioxidant and anti-inflammatory agent?
- A) Zinc
  - B) Magnesium
  - C) Calcium
  - D) None of the above
77. Chromene structural moieties are one of the most vital classes of the.....unit with diverse biological activities.
- A) Heterocyclic
  - B) Homocyclic
  - C) Momocyclic
  - D) Both (A) And (B)
78. The term PVA in packaging stands for.....
- A) Post Vacreation Activity
  - B) Potassium Valeric Acid
  - C) Polyvinyl Alcohol
  - D) None of the above
79. The type of biscuit having more fat in its formulation is.....
- A) Cream crackers
  - B) Savoury crackers
  - C) Short dough cookies
  - D) Semi sweet or hard sweet biscuits
80. Which of the following statements is /are CORRECT
- A) EVOH is sensitive to moisture
  - B) EVOH is good oxygen barrier
  - C) Both (A) and (B)
  - D) All of the above

81. Which of the following is an example of an antioxidant?
- Saccharin
  - Butylatedhydroxytoluene (BHT)
  - Butylatedhydroxyanisole (BHA)
  - Both (B) and (C)
82. Which of the following correct sequence of oxygen transmission rate of packaging films of same thickness?
- LDPE>HDPE>PET>EVOH
  - LDPE> PET > HDPE >EVOH
  - EVOH >HDPE>PET> LDPE
  - PET >HDPE> LDPE >EVOH
83. The Codex General Principles of Food Hygiene introduces the use of .....
- The critical control points
  - The Hazard Analysis and Critical Control Point (HACCP)
  - GMP for food
  - ISO 22000
84. ....is a measure of firmness of yolk.
- Yolk Index
  - Albumin index
  - Mass index
  - Both (A) and (B)
85. Fruits contain fructose which is a primary carbohydrate. These increase the blood sugar level. Why are fruits still recommended to be eaten?
- They have exceptionally low Glycemic Index
  - They have exceptionally highly Glycemic Index
  - They're secondary carbohydrates
  - None of the mentioned
86. Which one of the following food is not the functional food?
- Dietary fibre
  - Probiotics
  - Omega -3 polyunsaturated fatty acids
  - Pills Or Capsuls
87. Which of the following food products can be packed in MAP?
- Meat
  - Fish
  - Fruits
  - Vegetables
88. ....is a chief proteolytic enzyme present in meat causes tenderness of meat during aging.
- Cathepsin
  - Papain
  - Ficin
  - Actin

89. Egg white also may be pasteurized at lower temperatures of .....  
when combined with .....
- A) 52-53°C, hydrogen peroxide
  - B) 62-63°C, sulphur dioxide
  - C) 50-51°C, hydrogen peroxide
  - D) 60-61°C sulphur dioxide
90. Which of the following proteins control the elasticity of wheat gluten?
- A) Gliadins
  - B) Glutelins
  - C) Gliadins and Glutelins
  - D) All of the above
91. Sorbic acid is mostly used as preservatives in which of following food product?
- A) Meat
  - B) Milk
  - C) Baked products
  - D) Fruits
92. Allowing pigs to rest for one hour prior to slaughter and quiet handling will considerably reduce the risk of
- A) DFD
  - B) PSE
  - C) Boar taint
  - D) Tiger strip
93. When did the world's first vitamin-fortified fruit drinks appear?
- A) 1950
  - B) 1942
  - C) 1940
  - D) 1948
94. Horizontal jet pearler is used in paddy milling for .....
- A) Polishing
  - B) Whitening
  - C) Pearling
  - D) None of them
95. The Declaration on World Food Security pledges its efforts to reducing the number of undernourished people to \_\_\_\_ their present level no later than 2015.
- A) Half
  - B) One-third
  - C) One-fourth
  - D) Three-fourths



96. Chlorophyll extracts are not permitted for use as food colorant in which country:  
A) Pakistan B) France  
C) USA D) UK
97. Cow or buffalo body fat is called.....  
A) Lord B) Tallow  
C) Pork D) None of these
98. Which of the following organizations are responsible for monitoring food protection?  
A) CAC B) FDA  
C) BIS D) ISO
99. Antimicrobial effect of thyme is due to presence of .....  
A) Allicin B) Allylsulphide  
C) Eugenol D) Thymol
100. Gamma- and X-rays and highly accelerated electrons are commonly used for food preservation. These are absorbed by all forms of matter. ....have much greater penetrating power than other radiations  
A) Gamma rays B) X rays  
C) Ultraviolet rays D) Ozone
101. The percent endosperm is present in corn kernel is about.....  
A) 85% B) 80%  
C) 82% D) 87%
102. The ideal temperature of meat smoke room is.....  
A) 52°C B) 57°C  
C) 55°C D) 60°C
103. The processing temperature for shelf stable canned meats is.....  
A) 65°C B) 72°C  
C) 98°C D) 100°C



**104.** FDA standards for enrichment of cereal flour for iron

- |             |             |
|-------------|-------------|
| A) 20 ml/lb | B) 30 ml/lb |
| C) 40 ml/lb | D) 50 ml/lb |

**105.** Mustard shows antimicrobial effect because it contains.....

- |                     |                     |
|---------------------|---------------------|
| A) Allylsulphide    | B) Allylisosulphide |
| C) Allylthiocyanate | D) Allylthiocynate  |

**106.** Food Safety and Standards Act, 2006- passed by Indian Parliament and notified on:

- |                                  |                                |
|----------------------------------|--------------------------------|
| A) 24 <sup>th</sup> August, 2006 | B) 24 <sup>th</sup> June, 2006 |
| C) 24 <sup>th</sup> July, 2006   | D) 24 <sup>th</sup> May, 2006  |

**107.** Veal is obtain from.....

- |          |            |
|----------|------------|
| A) Sheep | B) Buffalo |
| C) Goat  | D) Calf    |

**108.** The term PSE is used to describe a carcass quality condition known to occur in pork, beef and poultry. It stands for.....

- A) Pale, soft, exudative meat
- B) Pungent, sour, elongated meat
- C) Putrefied, sour, exudative meat
- D) Putrefied, soft, elongated meat

**109.** Cooking test include.....

- |                          |                           |
|--------------------------|---------------------------|
| A) Chemical test of egg  | B) Biological test of egg |
| C) Bacterial test of egg | D) Both (B) and (C)       |

**110.** ISO 9000 standards were first released in .....

- |         |         |
|---------|---------|
| A) 1987 | B) 1990 |
| C) 1992 | D) 1995 |

111. Which salt of saccharine is mainly used as sweetener?

- A) Calcium
- B) Potassium
- C) Magnesium
- D) Sodium

112. Smoking is done.....

- A) After slaughtering
- B) Before curing
- C) After curing
- D) At any time

113. ISO 9004:2009 Quality management systems deals with.....

- A) Fundamentals and vocabulary
- B) Customer satisfaction
- C) Guidelines for performance improvements
- D) Requirements

114. ....is a common method of preventing boar taint

- A) Castration of male pig
- B) Halal method of slaughtering
- C) Curing
- D) Salting

115. Calcium stearate is used as an.....

- A) Anticaking agent
- B) Antifungal agent
- C) Antifoaming agent
- D) Antibacterial agent

116. Nutritional status is related to

- A) Health
- B) Vigor
- C) Achievement
- D) All Of Them

117. "AGMARK Act 1937" comes under

- A) Department of Consumer Affairs, Govt. of India
- B) Directorate of Marketing and Inspection
- C) Department of Agriculture and Cooperation
- D) Department of Legal Metrology

**118.** Rice bran contains about.....percent fat.

- |           |           |
|-----------|-----------|
| A) 10-12% | B) 12-15% |
| C) 17-19% | D) 15-17% |

**119.** Oat milling is a major cereal industry for the production of .....

- A) Baked goods
- B) Breakfast cereals
- C) Malted beverage
- D) Baked goods and malted beverage

**120.** In the process of Milling of Wheat it is tempered before grinding by treating with water because.....

- A) Endosperm will be tough and readily separated from the bran.
  - B) Bran will be tough and readily separated from the endosperm
  - C) This Practice is followed traditionally
  - D) None of the above
-

## ROUGH WORK



## ROUGH WORK

AL

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO

Booklet Serial No. 219921

Test Booklet Series

TEST BOOKLET  
TOUR AND TRAVEL  
Written Test - 2023  
(68)

A

Time Allowed: Two Hours

Maximum Marks: 120

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2. Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test Booklet Series Code A, B, C or D carefully and without any omission or discrepancy at the appropriate places in the OMR Answer /Response Sheet. Any omission/discrepancy will render the Response Sheet liable for rejection.
3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside.  
*DO NOT write anything else on the Test Booklet.*
4. This Test booklet contains 120 items (questions). Each item comprises of four responses (answers). You will select the response which you want to mark on the Answer Sheet/Response Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
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6. All items carry equal marks.
7. Before you proceed to mark in the Answer /Response Sheet, the response to various items in the Test Booklet, you have to fill in some particulars in the Answer /Response Sheet as per instructions sent to you with your Admission Certificate.
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9. Sheets for rough work are appended in the Test Booklet at the end.
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**THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY THE CANDIDATE IN THE WRITTEN TEST (OBJECTIVE TYPE QUESTIONS PAPERS).**
  - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, (0.25) of the marks assigned to that question will be deducted as penalty.
  - (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above for that question.
  - (iii) If a question is left blank, i.e., no answer is given by the candidate, there will be **no penalty** for that question.

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1. According to Leiper's tourism system model 1990; the term TGR stands for
  - A) Traveller-generating region
  - B) Tourist Generating region
  - C) Traveller generating reasons
  - D) None of the above
  
2. The term; tourism defined as "the sum of the phenomena and relationship arises by interactions... " ...is devised by
  - A) McIntosh and Goeldner
  - B) S. Wahab and Fletcher
  - C) Macintosh and Gilbert
  - D) None of the above
  
3. According to UNWTO classification of travellers 1978 ,an exact type of travel is not included in tourism statistics is as
  - A) Business
  - B) Excursionist
  - C) Visitors
  - D) Nomads
  
4. In the year 1974, Stanley Plog developed and proposed a theory named as Plog's model; describes some drives which clarifies human travel patterns; are as follows:
  - i. Psychocentric, allocentric
  - ii. Midcentric
  - iii. Near Allocentric
  - iv. Near PsychocentricFrom the above select the correct answer using code
  - A) Only i
  - B) Only i and ii
  - C) Only ii and iii
  - D) All i, ii, iii, iv, together only



5. UNWTO is one of the intergovernmental international organization specific are the structure of the UNWTO as members states
- A) 179
  - B) 159
  - C) 189
  - D) None

6. The tourist typology derived by Cohen's under Cohen's classification of tourist 1974; match the following (list 1 and list 2 ) as per the theory of tourist typology or classification as mentioned in code :

**List -1 (Type of Tourism )**

- a. Non- institutionalized
- b. Institutionalized tourist
- c. Individual Travel
- d. Tourism industry/tour operator

**List -2 (Terms associated)**

- i. Familiarity
- ii. Novelty
- iii. The explorer
- iv. The organized mass tourist

Codes:

- A) A-iii , B- ii , C-iv, D-i
  - B) A-iii, B-ii, C-i, D-iv
  - C) A-ii, B-i, C-iii, D-iv
  - D) A-iv, B-ii, C-iii, D-i
7. Ministry of tourism tries to improvise skill set of tourism service provider at the Broader prospects of Indian canvas and hence the scheme mentioned under; launched for :
- A) Capacity Building for Supervisor's Provident
  - B) Capacity Building for Services and Products
  - C) Capacity Building for service providers
  - D) There is no such scheme exists
8. National tourism policy draft 2022 was made public by Ministry of Tourism GoI on.
- A) 12 July 2022
  - B) 22 Aug 2022
  - C) 12 July 2021
  - D) 22 July 2023

9. An organization which acted as a catalyst towards responsible development of tourism from and within Asia and Pacific regions, known as was founded in the year of ...
- A) Pacific Area Transport Accreditation, 1954
  - B) Pacific Asia Travel Association, 1951
  - C) Pacific Asia Travel Accreditation, 1951
  - D) None of the above
10. One of the following who is the current or existing Secretary General of UNWTO
- A) Mr. Taleb Rifai
  - B) Mr. Ban Ki Moon
  - C) Mr. Zurab Pololikashvili
  - D) Dr. Oswin Omera Gunn
11. Bandipur National Park is an important national park in the Indian soil; which state does this famous national park located with
- A) Kerala
  - B) Karnataka
  - C) Madhya Pradesh
  - D) None
12. Towards Environmental impact assessment crafted through tourism phenomenon, one of the following a check list in the EIA process used, usually known as :
- A) Marr's checklist
  - B) Green's check list
  - C) Ryan's list
  - D) None of them

13. Choose the exact or correct factors; as mentioned in the codes below it is in reference to Mathieson and wall (1982) based study on factors influencing the magnitude of the economic impacts of tourism:

- i. Type of Tourism activities and attractions for tourists
- ii. Volume of tourist spending
- iii. Level of economic development in the region
- iv. Extent of tourist spending & multiplier effects in tourism
- v. Extent of seasonality in the region

**Codes:**

- |                                |                      |
|--------------------------------|----------------------|
| A) i,ii and v                  | B) iii only          |
| C) all factors mentioned above | D) None of the above |

14. According to Coltman 1989; the term used as Elizabethan travelers meant for one of the following:

- A) Travel to Broadening view for world vision
- B) Travel to Broden experiences and knowledge
- C) A and B both
- D) None of them

15. The first major guidebook named as grand tour was published in the following year and was authored by:

- A) 1749 AD by Thomas Nugent
- B) 1749 AD by Tomas Cook
- C) 1759 AD by Thomas Nugent
- D) None of the above

16. According to the Policy Cycle model represented by Dredge and Jenkins 2007 one of the following is not a step in the Cycle Model:

- A) Selection of Preferred alternative
- B) Implementation
- C) Evaluation of policy Solution
- D) Creative humans part of this cycle

17. In Order to define Scales usually in the Concept of tourism Planning according to Baud – Bovy and Lawson (1998) had outlined the main emphasis on three levels..... as follows; select the correct code as the right answer for the same

- i. National Level
- ii. Regional and Marginal Levels only
- iii. Regional level
- iv. Local level

**Codes:**

- A) i,iii, iv
  - B) ii only
  - C) ii and iv
  - D) none of them
18. As per Costa 2006, the tourism planning theory and Practices area to be associated with following term:
- A) Town Planning
  - B) Event Planning
  - C) Recreational Plans
  - D) Both B and C
19. Tourism Typology developed by Wall in 1993 consist of many factors match the following in this context from table 1 and table 2 opt for corrected match option from

**codes :**

**Table 1**

- a. Attractions Types
- b. Location
- c. Spatial Characteristics
- d. Development Strategies

**Table 2**

- i. Highly Developed, Developed , Developing
- ii. Water and land based
- iii. Nodal, linear and extensive
- iv. Cultural, natural and creational

**Codes:**

- A) a-iii, b-ii, c-i , d-iv
- B) a-iv, b-ii, c-iii, d-i
- C) a-ii, b-iii, c-i, d-iv
- D) a-i, b-ii, c-iii, d-iv



20. One of the tourist who prefers novelty from the exploration Prospective at all costs even danger with any capacity also neglect the contact with other tourists

- A) Drifter
- B) Spiritual
- C) Heritage and Cultural
- D) None

21. Tourism Products are being influenced by the wide range of factors, some are external and Some are internal as well, in view of mentioned Factors of each type in table 1 match with their type of variables in table 2 and opt for corrected match option from codes:

Table 1

- a. External
- b. Internal

Table 2

- i. Socio cultural and Environmental change
- ii. Globalization
- iii. Ethical issues
- iv. Political scenarios
- v. Taste, health & Safety

Codes:

- A) a-i,ii,iv ; b-iii, v
- B) a-iii,v; b-ii,i, iv
- C) a-i, iii, ii; b-iv, v ,
- D) None

22. UNWTO headquarter pertains to the following city:

- A) Paris
- B) Nice
- C) Madrid
- D) Brussels

23. Archeological Survey of India is an organization associated with following Ministry:

- A) Ministry of Civil Aviation, GoI
- B) Ministry of Tourism, GoI
- C) Ministry of Culture, GoI
- D) None

24. Following officer is the Current/ existing Secretary at Ministry of Tourism , GoI:
- A) V. Vidyavathi
  - B) V. Dayavathi
  - C) V. Ventakteshwar
  - D) R. K. Verma
25. Studies of Impact of Tourism had indicated adequate responses from & by the local communities; in this context Ap & Crompton 1993 had observed varieties of responses; which one is not the response indicated by ap and Crompton
- A) Embracement
  - B) Tolerance
  - C) Withdrawal
  - D) Taking things giving back things
26. The Oldest most Travel agency in the North America is Known as....and was established in the year of ....
- A) Brownlow Travel, 4<sup>th</sup> July 1887
  - B) British Travels, 4<sup>th</sup> April 1867
  - C) Brownell Travel, 4<sup>th</sup> July 1887
  - D) None of the above
27. The majority of travel agencies are not dealing usually with one of the following:
- A) Making reservation, planning itineraries
  - B) Communicating clients for the same
  - C) Acted as intermediaries for travel agents
  - D) Creating environmental awareness as their main function
28. Wildlife Protection Act 1972 had been amended in the following year:
- A) 1985
  - B) 2022
  - C) 2021
  - D) 2000

29. Match the following common names with their scientific names of the mammals as mentioned in the Schedule I of the wildlife protection Act 1975(Principal Act); choose correct option from code

Table 1 Common Name

- a. Blackbuck
- b. Chinkara
- c. Tibetan Antelope
- d. Tibetan Gazelle

Table 2 Scientific names

- i. *Gazella bennettii*
- ii. *Antelope Cervicapra*
- iii. *Procapra Picticaudata*
- iv. *Paantholops hodgsonii*

**Code**

- A) a- i , b-iii, c-ii , d- iv
  - B) a-ii, b-iii, c-i , d-iv
  - C) a-ii, b-i , c-iv, d-iii
  - D) None of the above
30. Experts view on tourism planning usually demonstrates different scales in tourism planning process. These scale are conceptually ..... in numbers
- A) 3
  - B) 5
  - C) 4
  - D) 2
31. According to Boniface and cooper 1987, functioning of tourism system is about:
- A) Generating areas Connected to destinations by routes
  - B) Generating areas disconnected to destinations by routes
  - C) Generating area connected to destination without any route
  - D) None of the above
32. Factors can influence temperature of the destination or geographical place:
- A) No man's land
  - B) Distance of place from sea
  - C) Distance between people's heart
  - D) Both A and B

33. The Latitude determines the temperature of the air mass and air mass characteristics control two most important climate variables
- A) Temperature
  - B) Precipitation
  - C) None
  - D) Both A and B
34. From the perspective of world Climate expressed by Arthur N. Stranler ; the group I (Low – latitude Climate) doesn't contain the following one :
- A) Wet Equatorial Climate
  - B) Wet-dry tropical Climate
  - C) Monsoon and trade Wind coastal Climate
  - D) Tundra Climate
35. Highest Peak of the Himalayan Ranges /mountains among the given four, pick one the same a correct answer:
- A) Nanga Parbat
  - B) Nanda Devi
  - C) Namcha Barwa
  - D) Kamet
36. Western and Eastern ghats lie in the following:
- A) Northern Plains
  - B) Himalayan region
  - C) Deccan Plateau
  - D) None of the above
37. The term people as an element of tourism or service marketing mix includes; the following:
- A) Customers only
  - B) Employees only
  - C) All human actors
  - D) Suppliers only



38. Who adopted the product life cycle model to the tourism industry and created Tourism Area Life Cycle Theory in 1980?
- A) Baum Tom
  - B) Butler R.W.
  - C) Cooper, Chris
  - D) Oliver R.L.
39. Following is not a Criteria for Classification of Tourism Transport:
- A) Public and Private
  - B) Mode
  - C) Domestic or international
  - D) Research issues in tourism
40. A researcher is using a sample since it is available to him/her it indicates the following:
- A) It is example of Convenience Sampling
  - B) Is always a Probabilistic sample
  - C) Normal for a larger sample size
  - D) Systematic sample
41. An intended research design for the research purposes called the cross-sectional research design when:
- A) It used to gather data from the entire population at many instances.
  - B) This applied to assimilation of data from an identified population frequency.
  - C) It involves to collect information from a small sample in two successive times.
  - D) It involves the collection of data from any given sample population only once.
42. According to Management Function -measuring performance, comparing measured performance to standards and taking corrective action is called as following Function of Management;
- A) Controlling
  - B) Planning
  - C) Directing
  - D) None of them

43. A Specific type of situation where current liabilities are in excess of current assets called as
- A) Positive net working Capital
  - B) Negative net working Capital
  - C) Excessive capital
  - D) Zero depth
44. In context of Tourism Products, a Tangible resource mentioned under are
- A) Infrastructure
  - B) Urban development
  - C) Buildings
  - D) All of the above
45. Any experience of Intangible resources is specifically about
- A) Palaces to visit
  - B) Hotels to stay
  - C) Restaurant to eat
  - D) None of the above
46. An academic enrichment of Tourism related education will be considered complete study (as mentioned) it should comprise of
- A) Geography, environment and ecology
  - B) History, heritage and culture
  - C) Economics and Management
  - D) All of the above at least
47. Port Blair's IATA code is .....
- A) IXB
  - B) PBR
  - C) IXZ
  - D) PRT

48. In which month the Khajuraho dance festival is organised each year in the
- A) November
  - B) December
  - C) January
  - D) February
49. Following city became the hosting city for the event 17<sup>th</sup> "Pravasi Bhartiya Sammelan" held recently
- A) Indore
  - B) Hyderabad
  - C) Delhi
  - D) Bangalore
50. An Individual known as founder president of IATO?
- A) Subash Goyal
  - B) Ram Kohli
  - C) Vijay Sharma
  - D) Inder Sharma
51. Concept of Heritage Hotels; From the prospective of and Tourism following year is considered as a benchmark for commencement of declaration of any heritage property as heritage hotel?
- A) Before 1845
  - B) 1950
  - C) 1850
  - D) 1900
52. Following is not the country offering visa on arrival for the Indian citizens;
- A) Thailand
  - B) Sri Lanka
  - C) Indonesia
  - D) Spain

53. To be Described as a tourist; one have to away from home or city for more than ....
- A) 12 hours
  - B) 24 hours
  - C) 10 hours
  - D) 36 hours
54. As per Dumazedier 1973, leisure has following ...main functions:
- A) 4
  - B) 3
  - C) 7
  - D) None
55. One of the following calculation systems for calculating international fares which is in reference to the MPM between two specific points or destinations
- A) Mileage control
  - B) Maximum permitted mileage
  - C) Mileage method
  - D) Fare constructions
56. A specific Five years plan as mentioned below had emphasized for tourism to be awarded the status of an Industry,
- A) 5<sup>th</sup> Five Year Plan
  - B) 6<sup>th</sup> Five Year Plan
  - C) 7<sup>th</sup> Five Year Plan
  - D) 8<sup>th</sup> Five Year Plan
57. To be able to Act as a tourist one is required to have
- A) Disposable income
  - B) Discretionary time
  - C) Affluent desire to move
  - D) All of the above



58. What is Marketing management... is about
- A) Process of planning and executing conception
  - B) Strategy creation
  - C) Implementation of strategic views
  - D) All of the above
59. Following State/Union Territory, where the largest number of wild life sanctuaries are prevailing?
- A) Madhya Pradesh
  - B) Andaman and Nicobar Islands
  - C) Karnataka
  - D) Assam
60. Marketing terminology "Promotion Mix" includes
- A) Advertising
  - B) Sales Promotion
  - C) Direct Marketing
  - D) All of the above
61. Services are differing from product in this context the following mentioned additional variables to explain service marketing along with product marketing are
- A) Physical evidence and process
  - B) Placement and packaging
  - C) Place and Publicity
  - D) Partnership and Positioning
62. An Institution or financial organisation which authorises the foreign currency dealers to buy and sell foreign currency in India?
- A) State Bank of India
  - B) Reserve Bank of India
  - C) Ministry of Tourism
  - D) Ministry of Home Affairs

63. Example of the random sampling method/ technique?

- A) Snowball sampling
- B) Stratified sampling
- C) Cluster sampling
- D) Systematic sampling

64. Any Qualitative research in the field of tourism or social sciences are typically based on questions, that are...

- A) Unstructured
- B) Face to face interview
- C) Predominant
- D) All of the above

65. Match the list1 with list 2 with an appropriate code of the airport with their respective cities, and opt the correct answer from the code mentioned:

List – 1

- i. Bagdogra
- ii. Bhuj
- iii. Ranchi
- iv. Vadodara

List – 2

- 1. BHJ
- 2. IXR
- 3. BDQ
- 4. IXB

Codes:

- |    | i | ii | iii | iv |
|----|---|----|-----|----|
| A) | 4 | 1  | 2   | 3  |
| B) | 4 | 2  | 3   | 1  |
| C) | 3 | 4  | 2   | 1  |
| D) | 1 | 2  | 3   | 4  |

66. The term Standard deviation is to be understood as:

- A) The square root of the variance
- B) The square root of the median
- C) The square root of mode
- D) The square root of dispersion

67. Tourist term had been defined at the WTO Conference at Rome; in the following popular year:
- A) 1972
  - B) 1987
  - C) 1980
  - D) 1963
68. Following is not the term from Hotel Industry :
- A) Front desk
  - B) Space shuttle
  - C) Laundry
  - D) CPAI
69. One of the following is the not a Locational criteria-based hotel:
- A) Suburban hotels
  - B) Resort
  - C) Youth hostels
  - D) Motels
70. A Sound Hotel Depends on the following:
- A) A good Member of Parliament or assembly
  - B) Nice whether
  - C) Coordination of all functional dept. of hotel
  - D) None
71. The Term Tourism= Tour + ism , what does suffix ism denote:
- A) Love
  - B) Passion
  - C) Action
  - D) Nothing

72. GMT meant by, following in the prospect of tourism, time, geography; as a commonly accepted term:
- A) Good Mood Tourist
  - B) Greenwich Mean Time
  - C) Global Merchandising text
  - D) God Made-up the Troubles
73. One of the following is an appropriate example of commercial non-residential catering outlet?
- A) Coffee Shop
  - B) Motel
  - C) Hotel
  - D) Resort
74. Match the following in the table 1 and 2 with exact values in the context of Basin wise ground water potential and utilization in India; as per Ministry of water resources GOI, New Delhi

| Table 1                                    | Table 2                                |
|--|--|
| Name of the Basin / ground water resources | Level of groundwater (Cubic km/ years) |
| a. Brahmaputra                             | i. 19.53                               |
| b. Kaveri                                  | ii. 33.52                              |
| c. Ganga                                   | iii. 55.33                             |
| d. Godavari                                | iv. 3.37                               |

**Code :**

- A) a-ii, b-iii, c-iv, d-i
- B) a-iii, b-ii, c-i, d-iv
- C) a-iii, b-iv, c-i, d-ii
- D) a-iv, b-iii, c-ii, d-i



75. Revised Guidelines for approval of Hotels at project stage and star classification and re-classification of operational Hotels was issued by Ministry of Tourism Govt on :
- A) Jan 2018
  - B) March 2018
  - C) May 2019
  - D) None
76. Which of the following year the daily air services was started from the city of London to city of Paris:
- A) 1919
  - B) 1945
  - C) 1939
  - D) 1957
77. following are not to be considered as tourists according to the recommendations of the World Tourism Organisation?
- A) Diplomats travelling between their country of origin and duty station.
  - B) Cruise passengers
  - C) Pilgrims
  - D) Visiting friends and relatives
78. The term usually referred by the travel business houses - "Incentive Tourism" denotes
- A) A travel rewarded with commissions
  - B) Travel that has been paid for by a firm as a reward to employees
  - C) Travel stimulated by inducements
  - D) Travel using vouchers to cover spending enroute
79. **Assertion (A):** One of the most popular beaches in Goa Calangute is a treat for the adventure sports freak.
- Reason (R):** Foreigners throng the beaches. **Codes:**
- A) Both (A) and (R) are true and (R) is the correct explanation.
  - B) Both (A) and (R) are true, but (R) is not the correct explanation of (A)
  - C) (A) is true, but (R) is false.
  - D) (A) is false, but (R) is true.

80. One of the following submarine museum of India; which is considered the first of its kind in South Asia is at ...
- A) Vishakhapatnam
  - B) Hyderabad
  - C) Vijayawada
  - D) Bheemunipatnam
81. A specific term "Common Interest Tourism" states the following:
- A) A group of people travels for the same interests
  - B) Group visits between "twinned" towns only
  - C) A synonym for visits to friends and relatives
  - D) The purpose of visit is significantly shared by the visitors and should be alike
82. Following is the theme of the world tourism day 2023: ; announced by UNWTO
- A) Tourism with greenery
  - B) Tourism with Green investments
  - C) Tourism with Green initiatives
  - D) None of the above
83. A type of locational hotel called "Down town hotels" are about:
- A) Nearby airport
  - B) Natural or manmade sites
  - C) Outskirts of a city
  - D) Hotel at Heart /Centre of the city may be in busy commercial and shopping districts.
84. "Kitchen stewarding" is a segment in the hotel department concerned with one of the following
- A) preparation and service of sandwiches, fruit platters, juices and shakes.
  - B) preparation and service of cakes and pastries.
  - C) storage, maintenance, cleanliness and issue of crockery, cutlery, holloware, Chinaware and glassware to restaurants and kitchens.
  - D) preparation of tea, coffee and malted hot beverages for various food and beverage outlets

85. Motels is the
- A) Rooms especially equipped for therapy
  - B) Mobile homes that families take across the country
  - C) A roadside hotel provides bed, stay and parking facility
  - D) Traditional lodges in Europe for the Christian pilgrims to Jerusalem
86. A well-known airline name in PSU Air India recently acquired by Tata Son with its fully owned subsidiary Talace Pvt. Ltd in the following date:
- A) 27 Jan 2022
  - B) 26 Dec 2021
  - C) 19 July 2022
  - D) None of the above
87. **Assertion (A):** Christopher Columbus, Ferdinand Magellan and Sir Francis Drake made great ocean voyages to discover North and South America, Australia and New Zealand.  
**Reason (R):** Development of the rudder, triangular sails and the mariner's compass helped navigation and distant travel.
- Codes:**
- A) Both (A) and (R) are true and (R) is the correct explanation.
  - B) Both (A) and (R) are true, but (R) is not the correct explanation.
  - C) (A) is true, but (R) is false.
  - D) (A) is false, but (R) is true.
88. If a Tourist is fascinated in the ethnic aspects of historical tourism, one should visit
- A) Libraries and theme arcades
  - B) Museums and art galleries
  - C) Archives
  - D) Palaces
89. Specific one role is not distinct for tour guide:
- A) Informer
  - B) Entertainer
  - C) Facilitator
  - D) Arguer

90. The act of review of literature aims towards a researcher is mainly about:
- A) Analysing the data only
  - B) Identifying the key variables and research gap
  - C) Understanding on selecting of right Statistical tools
  - D) Drawing conclusion
91. MP tourism board's Headquarter is situated at:
- A) Ranchi
  - B) Sanchi
  - C) Kochi
  - D) Bhopal
92. Institute, that became the Central Nodal Agency for Rural and Sustainable Tourism under Ministry of Tourism GOI, recently:
- A) IITTM
  - B) NYCHTUM
  - C) HIM
  - D) None
93. In the context of recent metrological trends seen in India, the total water available for precipitation in the country is around about one year is nearly cubic km
- A) approx. 1000
  - B) approx. 2500
  - C) approx. 4000
  - D) None
94. CPCB, is an institute working in the field of prevention and control of Pollution; the full form of the same is:
- A) Central Pollution Control Board
  - B) Controlling Pollution Credit Bureau
  - C) Controlling Pollutant Credible Bureau
  - D) None



95. A hotel is not the combination of following services or goods:

- A) Bed- breakfast
- B) Front desk – room services
- C) Educating -awarding information
- D) Food- beverages

96. **Assertion (A):** The Marketer needs to understand three related aspects of consumer behaviour analysis; they are : consumer motivations; consumer typology and consumer purchasing process.

**Reason (R):** Henceforth tourism marketing is to be focused with consumer's motives, behaviour, decision and characteristics.

**Codes:**

- A) Both (A) and (R) are true
- B) Both (A) and (R) are true, but (R) is a correct proposed measure accorded for tourism marketers.
- C) (A) is true, but (R) is false.
- D) (A) is false, but (R) is true.

97. Tourism related need mentioned in the list 1 are to be matched with list 2 ; which is a contextual needs of hierarchy as mentioned by Maslow, match the same and pick the correct option from the code given Delhi

Table 1

Tourism Need

- a. Provision of clean and safe drinking water
- b. Airline/ Hotel Security
- c. Desire for Flying, Cruise Tourism
- d. Acceptance as Tour group or tourist and consumer also

Table 2

Maslow's need Hirarchy

- i. Safety
- ii. Physiological
- iii. Status/ esteem
- iv. Belongingness

Code :

- A) a-ii, b-i, c-iii, d-iv
- B) a-i, b-ii, c-iv, d-iii
- C) a-iii, b-i, c-ii, d-iv
- D) a-iv, b-ii, c-iii, d-i

98. One of the grandest and largest chaitya Griha in India is lies at :

- A) Ellora caves
- B) Ajanta Caves
- C) Karla Caves
- D) None of them

99. A Specific type of travellers who eyes travel as not a perk but rather as another source of obligation:

- A) Leisure travellers
- B) Business travellers
- C) Free Independent travellers
- D) Vacationers

100. Following with respect to research problem is incorrect:

- A) Simple and complex
- B) Well defined and ill-defined
- C) Tame and wicked
- D) A non-useful, soft system and creatively assigned

101. Arrange the following in chronological sequence:

- A) Madras Museum, Madras Memorial Hall, Madras Egmore Maternity Hospital, Victoria Public Hall
- B) Madras Memorial Hall, Madras Museum, Madras Egmore Maternity Hospital, Victoria Public Hall
- C) Madras Egmore Maternity Hospital, Madras Museum, Madras Memorial Hall, Victoria Public Hall
- D) Victoria Public Hall, Madras Egmore Maternity Hospital, Madras Museum, Madras Memorial Hall

**102.** Following is the Name of City capital of Lakshadweep

- A) Amin
- B) Kiltan
- C) Minicoy
- D) Kavaratti

**103.** Which city is the capital City of South Africa:

- A) Durban
- B) Johannesburg
- C) Cape town
- D) Toranto

**104.** Most of the ecotourism sites in India are managed by

- A) Trust
- B) Society
- C) Council
- D) NGO

**105.** One of the following cities is the first world Heritage city of the India:

- A) Mumbai
- B) New Delhi
- C) Ahmedabad
- D) Bangalore

**106.** The Tourism Destination of South Munnar possess following one of the tribes:

- A) Palians and Mannas
- B) Red
- C) Bhils
- D) Todas

107. The Kailasa Temple at Ellora is considered the largest single piece of architectural wonder of the world was built by

- A) The Cholas
- B) The Pallavas
- C) The Rashtrakutas
- D) The Vernans Vijayanagara

108. Assertion (A): 'The Pushkar Fair' has now become a "must see" on the itinerary of every tourist.

Reason (R): It plays host to the biggest camel fair in Asia.

**Codes:**

- A) Both (A) and (R) are correct, (R) is the correct explanation.
- B) Both (A) and (R) are true, but (R) is not the correct explanation.
- C) (A) is correct, but (R) is false.
- D) (R) is correct, but (A) is false.

109. The basic philosophy of ecotourism is:

- A) Tourism needs to be developed in a manner that fits within the natural and cultural environment of a region.
- B) By paying special attention to the needs of the tourists.
- C) The carrying capacity of an environment or host community may be increased or decreased.
- D) Taking steps to promote and protect tourist attractions will create a legacy for future generations.

110. **Assertion (A):** Visitors to natural attractions often increase their awareness of nature's fragile condition and provide funds for its preservation through admission and user fees.

**Reason (R):** Many of the world's precious historical and cultural sites have survived because of visitors willing to pay to view treasures of the past.

**Codes:**

- A) Both (A) and (R) are true and (R) is the correct explanation of (A).
- B) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
- C) (A) is true and (R) is false.
- D) (A) is false and (R) is true.



111. Punjab name came out because:

- A) Five rivers
- B) Five wife's
- C) Five fathers
- D) Five by five

112. **Assertion (A):** Voluntourism is about combining volunteer work with a vacation.

**Reason (R):** It doesn't require any specific skills, just a helping attitude that makes a positive impact on the lives of locals of the destination visited.

**Codes:**

- A) Both (A) and (R) are true and (R) is the correct explanation.
- B) Both (A) and (R) are true, but (R) is not the correct explanation.
- C) (A) is true but (R) is false.
- D) (A) is false but (R) is true.

113. Any Mega Events Like Cricket World Cup can be Help in the following:

- A) To be a Destination Pull factors
- B) Functional for upgrading tourism infrastructure
- C) Improvement of destination image
- D) All of the above

114. Mahakaleshwar is a famous temple in the city of

- A) Ajmer
- B) Jaipur
- C) Udaipur
- D) Mount Abu

115. Large scale action plans of an organisation for interacting with environment in order to achieve long-term goals refers to

- A) Actions
- B) Objectives
- C) Strategic goals
- D) Strategies

116. At any research process when data organised in a meaningful or sensible manner it results as:

- A) Database
- B) Information
- C) Artificial intelligence
- D) An expert system

117. Valuing for Money pricing strategy for organised package tour intended to charge

- A) Medium price
- B) High price
- C) Low price
- D) Premium price

118. **Assertion (A):** Policy and planning are complementary to each other in laying a solid foundation of tourism development in any country.

**Reason (R):** Tourism planning is formulated for pro-poor tourism and pro-people tourism.

**Codes:**

- A) Both (A) and (R) are true and (R) is the correct explanation of (A).
- B) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
- C) (A) is true, but (R) is false.
- D) (A) is false, but (R) is true.

**119.** Choose the correct a non- function of tourism business?

- A) It acts as a ground operator.
- B) It retails the package tour.
- C) It deals with politician for their assembly elections preparations
- D) It is accountable to the cancellation of tour.

**120.** Tourism did not contribute the following:

- A) Negative Impacts on society
  - B) Employment
  - C) Harmony among the communities
  - D) Creating film star mainly mega actors
-

## ROUGH WORK



## ROUGH WORK

**DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO**

Booklet Serial No. **217217**

**Test Booklet Series**

**TEST BOOKLET**  
**COST ACCOUNTING**  
**Written Test - 2023**

**A**

**(37)**

**Time Allowed: Two Hours**

**Maximum Marks: 120**

**INSTRUCTIONS**

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test Booklet Series Code A, B, C or D carefully and without any omission or discrepancy at the appropriate places in the OMR Answer /Response Sheet. Any omission/discrepancy will render the Response Sheet liable for rejection.
3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside.  
**DO NOT write anything else** on the Test Booklet.
4. This Test booklet contains **120** items (questions). Each item comprises of four responses (answers). You will select the response which you want to mark on the Answer Sheet/Response Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
5. You have to mark all your responses **ONLY** on the separate Answer /Response Sheet provided. See *directions in the Response Sheet*.
6. **All** items carry equal marks.
7. Before you proceed to mark in the Answer /Response Sheet, the response to various items in the Test Booklet, you have to fill in some particulars in the Answer /Response Sheet as per instructions sent to you with your Admission Certificate.
8. After you have completed filling in all your responses on the Response Sheet and the examination has concluded, you should hand over to the Invigilator **only the Answer /Response Sheet**. You are permitted to take away with you the Test Booklet and **Candidate's Copy of the Response Sheet**.
9. Sheets for rough work are appended in the Test Booklet at the end.
10. While writing Centre, Subject and Roll No. on the top of the Answer Sheet/Response Sheet in appropriate boxes use **"ONLY BALL POINT PEN"**.
11. **Penalty for wrong answers:**  
**THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY THE CANDIDATE IN THE WRITTEN TEST (OBJECTIVE TYPE QUESTIONS PAPERS).**
  - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **(0.25)** of the marks assigned to that question will be deducted as penalty.
  - (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above for that question.
  - (iii) If a question is left blank, i.e., no answer is given by the candidate, there will be **no penalty** for that question.

**DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO**

**(37) (A)/2023**

**[P.T.O.]**



1. Match List I with correct option in List II

**List - I**

- a. Stores Receiving
- b. Material handling and despatch
- c. Inspection/Quality control
- d. Production scheduling/Machine setups

**List - II**

- i. Orders executed
- ii. Number of production runs
- iii. Number of setups
- iv. Purchase requisition

- A) a-iv, b-i, c-ii, d-iii
- B) a-ii, b-iii, c-i, d-iv
- C) a-iv, b-iii, c-ii, d-i
- D) a-iii, b-i, c-ii, d-iv

2. Cash discount received from supplier is recorded at which side of three column cash book?

- A) Debit
- B) Credit
- C) No Entry is made
- D) Both Debit and Credit

3. The following is not a method of preparing cash budget:

- A) Receipts and Payment Method
- B) Income and Expenditure Method
- C) Adjusted Profit and Loss Account Method
- D) The Balance Sheet Method

4. What is the amount of fixed cost if Sales are Rs.3,00,000, Margin of Safety is Rs. 80,000 and Profit is Rs. 20,000 ?

- A) Rs. 95,000
- B) Rs. 85,000
- C) Rs. 75,000
- D) Rs. 55,000

5. Cost which requires their occurrence in cash are known as:

- A) Expired costs
- B) Opportunity costs
- C) Historical costs
- D) Out of pocket costs



6. Match List I with correct option in List II

**List - I**

- a. An increase in sales volume
- b. A decrease in variable cost per unit
- c. A decrease in contribution margin

- A) a-i, b-ii, c-iii
- B) a-ii, b-iii, c-i
- C) a-i, b-iii, c-ii
- D) a-iii, b-i, c-ii

**List - II**

- i. P/V Ratio will increase
- ii. P/V Ratio will decrease
- iii. P/V Ratio will not change

7. **Statement 1:** Cost control is corrective in nature  
**Statement 2:** Cost reduction is preventive in nature

- A) Statement 1 is true and statement 2 is false
- B) Statement 1 is false and statement 2 is true
- C) Both the statements are false
- D) Both the statements are true

8. A Bank Reconciliation statement is prepared with the help of:

- A) Cash book and Bank Column of Cash Book
- B) Pass Book and Bank column of Cash Book
- C) Cash Book and Bank column of Passbook
- D) None of the above

9. A level below the minimum stock level is called:

- A) Average stock level
- B) Re-ordering level
- C) Danger level
- D) None of the above

10. **Statement 1:** A balanced scorecard is a performance metric used to identify, improve, and control a business's various functions.

**Statement 2:** The four perspectives of a traditional balanced scorecard are Financial, Customer, Internal Process, and Learning and Growth.

Choose correct option:

- A) Both the statements are true.
- B) Statement 1 is true, but Statement 2 is false.
- C) Statement 1 is false, but Statement 2 is true.
- D) Both the statements are false.

11. Which of the following system of inventory hold the stock of inventories either at a very low level or not at all:

- A) ABC Analysis
- B) VED Analysis
- C) Just in time Approach
- D) All of the above

12. Match List I with correct option in List II

**List - I**

- a. Efficiency Ratio
- b. Capacity Ratio
- c. Activity Ratio

**List - II**

- i.  $\frac{\text{Standard hours for actual output}}{\text{Budgeted hours}} \times 100\%$
- ii.  $\frac{\text{Standard hours for actual output}}{\text{Actual hours}} \times 100\%$
- iii.  $\frac{\text{Actual hours}}{\text{Budgeted hours}} \times 100\%$

- A) a-i, b-ii, c-iii
- B) a-ii, b-iii, c-i
- C) a-i, b-iii, c-ii
- D) a-iii, b-i, c-ii

13. Method of pricing, when two separate pricing methods are used to price transfer of products from one sub unit to another, is called

- A) Dual pricing
- B) Functional pricing
- C) Congruent pricing
- D) Optimal pricing

14. **Statement 1:** Sunk costs are important in decision making so they should not be ignored

**Statement 2:** Beware of unutilized fixed costs in decision making

- A) Statement 1 is true and statement 2 is false
- B) Statement 1 is false and statement 2 is true
- C) Both the statements are false
- D) Both the statements are true

15. The type GST which is levied upon the interstate transactions is known as:

- A) IGST
- B) CGST and SGST
- C) SGST
- D) CGST

16. Which of the following is not a relevant cost in case management wants to replace an old machine with a new one?
- Disposal value of machine
  - Book value of machine
  - Cost of new machine
  - Variable costs
17. Which of these are not functional budgets:
- Sales budget
  - Purchase budget
  - Labour budget
  - Flexible budget
18. Match the following items of List I with List II:
- | List - I                      | List - II  |
|-------------------------------|--|
| a. Historical Cost Concept    | i. Only that information should be disclosed which impacts the decision of the users |
| b. Materiality Convention     | ii. An asset should always be shown at its cost price                                |
| c. Full Disclosure Convention | iii. A firm has infinite life term   |
| d. Going concern Concept      | iv. All relevant and necessary information should be disclosed                       |
- a-i, b-ii, c-iv, d-iii
  - a-ii, b-i, c-iv, d-iii
  - a-ii, b-i, c-iii, d-iv
  - a-ii, b-iii, c-iv, d-i
19. **Statement 1:** The total of material mix variance and material yield variance equals material usage variance  
**Statement 2:** When there is no material mix variance, the material yield variance equals the total usage variance
- Statement 1 is true and statement 2 is false
  - Statement 1 is false and statement 2 is true
  - Both the statements are false
  - Both the statements are true
20. A performance metric that calculates the creation of shareholder value is known as:
- Technical Analysis
  - Fundamental Analysis
  - Risk Analysis
  - Economic Value Analysis

21. **Statement 1:** The price paid for sub-contracting jobs should not be charged to the main contract.

**Statement 2:** Cost of work uncertified is valued at cost and thus does not include an element of profit.

- A) Statement 1 is true and statement 2 is false
- B) Statement 1 is false and statement 2 is true
- C) Both the statements are false
- D) Both the statements are true

22. ROI is 30% and Asset Turnover is 1.5. The Profit Margin for the firm is:

- A) 20%
- B) 45%
- C) 31.50%
- D) 28.5%

23. Match List I with correct option in List II

**List - I**

- a. Time keeping
- b. Time booking
- c. Cost Accounting Department
- d. Work study Department

- A) a-iii, b-i, c-ii, d-iv
- B) a-iv, b-i, c-ii, d-iii
- C) a-iv, b-iii, c-ii, d-i
- D) a-ii, b-iii, c-i, d-iv

**List - II**

- i. Recording time devoted by each worker on various jobs
- ii. Treatment of idle and over time
- iii. Recording workers in and out time
- iv. Conducting time and motion studies

24. From the following data calculate Quick Ratio :

Current Assets 1,00,000

Current Liabilities 40,000

Inventory 26,000

Prepaid Expenses 2,000

Select correct option:

- A) 1:1
- B) 1.8:1
- C) 1:1.8
- D) 1.5:1

25. A bonus equal to 50% of the wages of time saved is paid to Mr. Manoharlal as a reward to his extra work. Which incentive plan is followed in his case:

- A) Halsey Premium Plan
- B) Rowan Premium Plan
- C) Taylor System
- D) Gantt Task Bonus Plan



26. Match List I with correct option in List II

**List - I**

- a. Zero base Budgeting
- b. Master Budget
- c. Performance Budgeting
- d. Fixed Budget
- A) a-iv, b-i, c-ii, d-iii
- B) a-ii, b-iii, c-i, d-iv
- C) a-iv, b-iii, c-ii, d-ii
- D) a-iii, b-i, c-ii, d-iv

**List - II**

- i. Remains unchanged irrespective of level of activity
- ii. Production oriented
- iii. Summary of all functional budgets
- iv. Prepared from scratch

27. **Statement 1:** GST is a single domestic indirect tax law for the entire country.

**Statement 2:** There are six structures in Goods and Services Tax Model.

Choose correct option:

- A) Both the statements are true.
- B) Statement 1 is true, but Statement 2 is false.
- C) Statement 1 is false, but Statement 2 is true.
- D) Both the statements are false.

28. The total contract price in respect of a contract was Rs. 20, 00,000. On 31<sup>st</sup> March, 2023, the value of work certified was Rs. 15,00,000 and the total cost incurred was Rs. 11,00,000. Out of the total cost incurred, the work costing Rs. 50,000 remained uncertified as on 31<sup>st</sup> March, 2023. The cash received was Rs. 10, 00,000. The amount of profit to be transferred to Profit and Loss A/c for the year ending 31<sup>st</sup> March, 2023 should be:

- A) Rs. 1,50,000
- B) Rs. 2,00,000
- C) Rs. 3,00,000
- D) Rs. 4,50,000

29. Mr. Aditya from Jaipur, Rajasthan visited Mumbai, during his visit, he purchased one MacBook from Apple store located in Mumbai and did not mention his address while issue of invoice. He brought back laptop to Jaipur. What shall be the place of supply in this case?

- A) Rajasthan
- B) Mumbai
- C) Partly Rajasthan and Partly Mumbai
- D) None of these

30. Budgetary control helps in the implementation of:

- A) Marginal costing
- B) Standard costing
- C) Ratio Analysis
- D) Value Analysis

31. Which of the following is/are benefits of theory of constraint:

- a. Increased Profit
- b. Improved Capacity
- c. Reduced Lead Time
- d. Reduced Inventory

Select correct option:

- A) (a) and (d)
- B) (a), (b) and (d)
- C) (b) and (d)
- D) (a), (b), (c) and (d)

32. The technique which gives information related to the job holder is known as:

- A) Job description
- B) Job specification
- C) Job analysis
- D) Job evaluation

33. Who gave the 'adjusted discounted future wages model' of Human Resource Accounting?

- A) M. Scott Myers
- B) Roger H. Hermanson
- C) Aba Schwartz
- D) Curtis H. Jones

34. Which accounting system follows written down value method of depreciation?

- A) Cost Accounting
- B) Financial Accounting
- C) Both of the above
- D) None of the above

35. **Assertion (A):** Personal transactions of the owners are not recorded in the books of the firm.

**Reason (R):** As per business entity concept, business unit is separate from its owners.

Select correct option:

- A) Both (A) and (R) are true and (R) is the correct explanation of (A)
- B) Both (A) and (R) are true but (R) is not the correct explanation of (A)
- C) Both (A) and (R) are false
- D) (A) is true but (R) is false

36. Idle time caused due to waiting of materials is an example of:

- A) Production causes
- B) Administrative causes
- C) Economic causes
- D) All of the above

37. A continuous (rolling) budget
- A) Presents the plan for one level of activity and does not adjust to changes in the level of activity
  - B) Presents the plan for a range of activity so the plan can be adjusted for changes in activity
  - C) Is a plan that is revised monthly or quarterly, dropping one period and adding another
  - D) Is a part of long range strategic planning which changes with changes in company's strategy
38. The methods followed for disposal of under-absorption and over-absorption of overheads does not include:
- A) Application of supplementary rate
  - B) Writing off to Costing P&L Account
  - C) Trial and Error Method
  - D) Carry over to the next year
39. The formula for calculating EVA is:
- A)  $EVA = NOPAT - (Invested\ Capital * WACC)$
  - B)  $EVA = NOPBT - (Invested\ Capital * WACC)$
  - C)  $EVA = NOPAT - (Invested\ Capital * Cost\ of\ Equity)$
  - D)  $EVA = NOPAT - (Invested\ Capital)$
40. Computation of pre-determined fixed overhead rate should be based upon:
- A) Normal capacity
  - B) Actual capacity
  - C) Installed capacity
  - D) Practical capacity
41. Which of the following is/are part of Financing activities:
- a. Dividend received
  - b. Issue of share capital
  - c. Payment of Interest on Loan
  - d. Buy back of shares
- Select correct combination:**
- A) (a) and (b)
  - B) (a), (b) and (c)
  - C) (b), (c) and (d)
  - D) (a), (b), (c) and (d)



42. **Assertion (A):** FIFO is more suitable in the periods of falling prices.  
**Reason (R):** Closing stock generally represents fair valuation as it is valued at current prices in case of FIFO.
- A) Both (A) and (R) are true and (R) is the correct explanation of (A)  
 B) Both (A) and (R) are true but (R) is not the correct explanation of (A)  
 C) Both (A) and (R) are false  
 D) (A) is true but (R) is false
43. In a process 6,000 units are introduced during a period. 5% of input is normal loss. Closing work-in-process 60% complete is 800 units. 4,900 completed units are transferred to the next process. Equivalent production for the period is:
- A) 5,380  
 B) 5,800  
 C) 6,800  
 D) None of the above
44. Match the following items of List I with List II:
- | <b>List - I</b>           | <b>List - II</b>                                       |
|---------------------------|--|
| a. Form GSTR-1            | i. Details of Input Tax Credit                         |
| b. Form GSTR-2            | ii. Monthly Return to claim IT C and pay Tax Liability |
| c. Form GSTR-2B           | iii. Details of inward supplies                        |
| d. Form GSTR-3B           | iv. Furnishing details of outward supplies             |
| A) a-i, b-ii, c-iv, d-iii |  |
| B) a-ii, b-iv, c-i, d-iii |  |
| C) a-iv, b-iii, c-i, d-ii |  |
| D) a-ii, b-iii, c-iv, d-i |  |
45. Overhead costs are calculated by taking total of:
- A) Direct costs  
 B) Indirect costs  
 C) Direct and indirect costs  
 D) None of the above
46. A methodology for identifying the most important limiting factor (i.e., constraint) that stands in the way of achieving a goal and then systematically improving that constraint until it is no longer the limiting factor is known as:
- A) Theory of constraints  
 B) Theory of Factoring  
 C) Theory of Limitation  
 D) None of the above



47. Sequence correctly the following steps in Purchase procedure of materials:
- Selection of sources of supply
  - Issuing purchase order
  - Checking and passing of invoice for payment
  - Receiving authorised purchase requisition.
  - Receiving and inspection of materials
- (c), (b), (a), (e), (d)
  - (a), (b), (d), (e), (c)
  - (d), (a), (b), (e), (c)
  - (d), (b), (a), (e), (c)
48. Which of the following are objectives of Human Resource Accounting:
- Measuring cost related to the human resource
  - To proper accounting of retiring benefits and other benefits
  - For efficient and better human resource planning
  - To ensure proper utilization of resources
- Select correct option:
- (a) and (d)
  - (a), (b) and (d)
  - (b) and (d)
  - (a), (b), (c) and (d)
49. If the minimum stock level and average stock level of raw material A are 4000 and 9000 units respectively, then re-order quantity will be
- 8000 units
  - 10000 units
  - 12000 units
  - 14000 units
50. **Statement 1:** The personal account may be Natural Person Account, Artificial Person Account and Representatives Personal Account.
- Statement 2:** The golden rule related to Personal account is "Debit what comes in, credit what goes out".
- Both the statements are true
  - Both the statements are false
  - Statement 1 is true and statement 2 is false
  - Statement 1 is false and statement 2 is true

51. The cost of petrol in transportation company as per operating costing is:
- A) Running Cost
  - B) Fixed Cost
  - C) Semi-variable
  - D) Semi-fixed

52. The minimum rate of output tax applicable under Goods and Services Tax is:
- A) 5%
  - B) 12%
  - C) 18%
  - D) 28%

53. Match List I with correct option in List II

**List - I**

- a. Process costing
- b. Batch costing
- c. Unit costing
- d. Multiple costing
- A) a-iii, b-ii, c-i, d-iv
- B) a-ii, b-iii, c-i, d-iv
- C) a-iv, b-iii, c-ii, d-i
- D) a-i, b-iii, c-iii, d-iv

**List - II**

- i. Paper Mills
- ii. Toy manufacturing
- iii. Brick works
- iv. Automobile industry

54. Which of the following is/are benefits of value analysis:
- a. Reduces costs
  - b. Maintains high quality
  - c. Eliminates waste
  - d. Improves brand image

**Select correct option:**

- A) (a) and (d)
- B) (a), (b) and (d)
- C) (b) and (d)
- D) (a), (b), (c) and (d)

55. Cost Accounting Standards have been issued by:
- A) The Institute of Chartered Accountants of India
  - B) The Institute of Cost Accountants of India
  - C) The Institute of Company Secretaries of India
  - D) Chartered Institute of Management Accountants of India

56. Match List I with correct option in List II

**List - I**

- a. Market based price
- b. Decision unit
- c. Margin of safety
- d. Difference between cost of two alternatives

- A) a-iv, b-i, c-ii, d-iii
- B) a-ii, b-iii, c-i, d-iv
- C) a-iv, b-iii, c-ii, d-i
- D) a-iii, b-i, c-iv, d-ii

**List - II**

- i. Zero-base budgeting
- ii. Differential cost
- iii. Transfer pricing
- iv. Break even Analysis

57. Which of the following is not a suitable business activity where job costing can be employed:

- A) Construction of flyover
- B) Printing work
- C) Interior decoration
- D) Furniture manufacturing

58. **Statement-1:** The amount of expenditure which enhances the earning capacity of the firm is known as revenue expenditure.

**Statement-2:** The amount of expenditure which maintains the earning capacity of the business firm is known as capital expenditure.

Choose correct option:

- A) Both the statements are true.
- B) Statement 1 is true, but Statement 2 is false.
- C) Statement 1 is false, but Statement 2 is true.
- D) Both the statements are false.

59. A document that clearly states essential job requirements, job duties, job responsibilities, and skills required to perform a specific role is known as:

- A) Job Description
- B) Job Specification
- C) Job Analysis
- D) None of the these

60. Which of the following tax has been abolished by GST?

- A) Service Tax
- B) Income Tax
- C) Custom
- D) None of the above

61. Which ledger contains all real, nominal and personal transactions except debtors and creditors under non-integrated accounting system:

- A) Cost ledger Control A/c
- B) Work-in progress ledger
- C) Stores ledger
- D) Finished goods ledger

62. Following information relates to XYZ Company:

| Particulars            | Product - X | Product - Y | Product - Z |
|------------------------|-------------|-------------|-------------|
| Selling price per unit | 1900        | 2400        | 4000        |
| Variable cost per unit | 700         | 1200        | 2800        |
| Machine hours per unit | 3           | 2           | 1           |
| Maximum possible sales | 10000       | 2000        | 1000        |

The ranking of the products according to ranking per hour would be

- A) Rank I-X, Rank II-Y, Rank III-Z
- B) Rank I-Y, Rank II-X, Rank III-Z
- C) Rank I-Z, Rank II-Y, Rank III-X
- D) Rank I-X, Rank II-Z, Rank III-Y

63. **Statement 1:** Each contract is unique, specific and distinct

**Statement 2:** Abnormal loss on a contract is transferred to Profit and Loss Account and credited to the contract account

- A) Statement 1 is true and statement 2 is false
- B) Statement 1 is false and statement 2 is true
- C) Both the statements are false
- D) Both the statements are true

64. An accounting practice of adjusting financial statements according to price indexes is known as:

- A) Financial Accounting
- B) Inflation Accounting
- C) Cost Accounting
- D) HR Accounting



65. **Assertion (A):** Absorption costing rewards Production and variable costing rewards sales

**Reason (R):** In absorption costing, full costs are charged to production while under marginal costing, only variable costs are charged to production

- A) Both (A) and (R) are true and (R) is the correct explanation of (A)
- B) Both (A) and (R) are true but (R) is not the correct explanation of (A)
- C) Both (A) and (R) are false
- D) (A) is true but (R) is false

66. Which of the following "Analysis of factory overheads" sequence is correct?

- a) Absorption of factory overheads
- b) Apportionment of factory overhead costs to cost centres
- c) Allocation and apportionment of service centres cost to production centres
- d) Allocation of factory overhead costs to cost centres

- A) (c), (b), (a), (d)
- B) (a), (b), (d), (c)
- C) (d), (b), (c), (a)
- D) (d), (a), (b), (c)

67. Which method of Human Resource Accounting states that only scarce people should comprise the value of human resources?

- A) Replacement Cost Method
- B) Historical Cost Method
- C) Opportunity Cost Method
- D) Economic Value Method

68. A system in which cost accounts are distinct from financial accounts is called

- A) Integrated Accounting System
- B) Non-integrated Accounting System
- C) Cost Control Accounting System
- D) None of the above

69. **Assertion (A):** Variance analysis is undertaken for control of costs

**Reason (R):** Future costs are taken into consideration in Standard costing and variance analysis

- A) Both (A) and (R) are true and (R) is the correct explanation of (A)
- B) Both (A) and (R) are true but (R) is not the correct explanation of (A)
- C) Both (A) and (R) are false
- D) (A) is true but (R) is false

70. Which one of the following is not a revenue expenditure:

- A) Change of cinema hall screen
- B) Increasing the seating capacity of a cinema hall
- C) Depreciation
- D) Repair charges

71. Costing P&L A/c is not maintained in which accounting system:

- A) Integrated Accounting System
- B) Non-integrated Accounting System
- C) Both Integrated and Non-integrated
- D) None of the above

72. **Statement 1:** Transfer pricing should not have detrimental effect on the motivation of the divisional managers

**Statement 2:** Transfer pricing should be compatible with divisional objective of the firm, though the overall objective may be undermined

- A) Statement 1 is true and statement 2 is false
- B) Statement 1 is false and statement 2 is true
- C) Both the statements are false
- D) Both the statements are true

73. The following statements relates to overhead accounting and control:

- a. Fixed overhead cost per unit changes inversely with the increase in output levels
- b. Cost of primary packing material is treated as cost of distribution
- c. Total fixed overhead cost moves up if output exceeds the capacity
- d. Multiple rates of absorption of overhead should be preferred over blanket rate

Which of the above are correct?

- A) (a), (b), (c) and (d)
- B) (a), (b) and (c)
- C) (a) and (c) only
- D) (a), (c) and (d)

74. As per Sec 16(1) of the Goods and Services Tax Act, conditions for claiming tax credit is/are:

- a. Registered supplier
- b. Supplied Goods or services must be used for furtherance of business
- c. Possession of Tax Invoice
- d. Filed GSTR-1

Choose correct option:

- A) (a) and (c)
- B) (a), (b) and (c)
- C) (a), (c) and (d)
- D) (a), (b), (c) and (d)

75. Which one of them is not included in cost accounts:

- A) Notional rent of own building
- B) Fines and penalties
- C) Notional depreciation
- D) All of the above

76. Product Z requires 10 kgs of raw material at the rate of £5 per kg. The actual consumption of material for manufacturing of product A comes to 12 kgs of material at the rate of Rs.6 per kg. Direct material cost variance is:
- 12 (favourable)
  - 12 (unfavourable)
  - 22 (favourable)
  - 22 (unfavourable)
77. Which one of the following is included in the purchase price of materials:
- Demurrage
  - Detention charges
  - Penalty
  - Basic custom duty
78. **Statement 1:** Value Engineering implies analysing existing products and evaluating them to improve their functioning or reduce cost.  
**Statement 2:** Value Analysis is the review of new products during the design phase to reduce costs and increase functionality.  
 Choose correct option:
- Both the statements are true.
  - Statement 1 is true, but Statement 2 is false.
  - Statement 1 is false, but Statement 2 is true.
  - Both the statements are false.

79. Match List I with correct option in List II

| List - I                   | List - II                       |
|----------------------------|---------------------------------|
| a. Unit Level Activity     | i. Cost of product development  |
| b. Batch level activity    | ii. Cost of raw materials       |
| c. Product Level activity  | iii. Cost of equipment setup    |
| d. Facility level activity | iv. Cost of general advertising |
| A) a-iv, b-i, c-ii, d-iii  |                                 |
| B) a-ii, b-iii, c-i, d-iv  |                                 |
| C) a-iv, b-iii, c-ii, d-i  |                                 |
| D) a-iii, b-i, c-ii, d-iv  |                                 |



80. The following statements relates to job costing:
- a. Contract costing is unique , specific and distinct
  - b. Flow of production from department to department is uniform
  - c. Each job takes comparatively longer duration of time.
  - d. Each job maintains its identity through all stages of production.

Which of the above are correct?

- A) (a), (b), (c) and (d)
- B) (a), (b) and (c)
- C) and (d) only
- D) (a), (b) and (d)

81. GST was implemented in India from:

- A) 1<sup>st</sup> June 2017
- B) 1<sup>st</sup> August 2017
- C) 1<sup>st</sup> July 2017
- D) 1<sup>st</sup> April 2017

82. Which one of them are purely financial incomes/gains:

- A) Profit on sale of fixed asses
- B) Transfer fees received
- C) Cash discount received
- D) All of the above

83. AS-1 in India deals with:

- A) Cash Flow Statement
- B) Disclosure of Accounting Policies
- C) Depreciation Accounting
- D) Inventory Valuation

84. Match List I with correct option in List II

**List - I**

- a. Factory overhead
- b. Distribution cost
- c. General Administration cost
- d. Direct Expenses
- A) a-iii, b-ii, c-i, d-iv
- B) a-ii, b-iii, c-i, d-iv
- C) a-iv, b-iii, c-ii, d-i
- D) a-i, b-ii, c-iii, d-iv

**List - II**

- i. Audit fees
- ii. Depreciation on delivery van
- iii. Depreciation of machinery
- iv. Hire charges paid for machinery

85. Which of the following taxes have been subsumed in GST?
- A) Central Sales Tax
  - B) Central Excise Duty
  - C) VAT
  - D) All of the above
86. Which of the following cases can be covered under Operating Costing:
- a. Hospital Services
  - b. Transport Services
  - c. Electricity Services
  - d. Construction works
- Select correct option:
- A) (a) and (b)
  - B) (a), (c) and (d)
  - C) (a), (b), (c) and (d)
  - D) (a), (b) and (c)
87. In soap-making industry, which method of costing is best suited?
- A) Job costing
  - B) Contract costing
  - C) Process costing
  - D) Batch costing
88. When Margin of safety is 20% and PVR is 60%, the profit will be:
- A) 30%
  - B) 33.13%
  - C) 12%
  - D) None of the above
89. AS-3 in India deals with:
- A) Cash Flow Statement
  - B) Disclosure of Accounting Policies
  - C) Depreciation Accounting
  - D) Inventory Valuation
90. Over or Under Absorption of overheads may arise due to following:
- A) Faulty estimation of overhead cost
  - B) Unforeseen changes in production capacity
  - C) Unexpected changes in the method of production
  - D) All of the above

91. Relevant costs are:

- A) Sunk costs
- B) Future costs
- C) Standard costs
- D) Historical costs

92. **Assertion (A):** There can be difference in net profit between financial and cost accounts due to over or under absorption of overheads.

**Reason (R):** In financial accounts, all costs including overhead costs are charged on pre-determined overhead rate basis.

Whereas in cost accounts overhead may be charged on incurred basis.

- A) Both (A) and (R) are true and (R) is the correct explanation of (A)
- B) Both (A) and (R) are true but (R) is not the correct explanation of (A)
- C) Both (A) and (R) are false
- D) (A) is true but (R) is false

93. Idle time variance does not arise on account of:

- A) Shortage of materials supply
- B) Power failure in factory
- C) Absenteeism of workers
- D) Breakdown of machinery

94. Which of the following are not recorded in Profit and Loss Account:

- A) Bad Debts
- B) Loss due to fire
- C) Prepaid Insurance charges
- D) Wages and Salary

95. Which of these is not an assumption under EOQ Model:

- A) Zero lead time
- B) Demand of item is evenly spread
- C) Inventory carrying cost and cost of placing order are unknown
- D) Annual demand for consumption of an item is known.

96. Match List I with correct option in List II

**List - I**

- a. Labour Cost variance
- b. Labour Rate variance
- c. Labour Efficiency variance
- d. Idle time variance

**List - II**

- i. Standard Rate(Standard hours-Actual hours worked)
- ii. Actual hours (Standard rate-Actual rate)
- iii. Standard cost-Actual cost
- iv. Idle hours  $\times$  Standard rate per hour

- A) a-iv, b-i, c-ii, d-iii
- B) a-ii, b-iii, c-i, d-iv
- C) a-iv, b-iii, c-ii, d-i
- D) a-iii, b-i, c-ii, d-iv

97. R&D budget and Capital expenditure budget are examples of

- A) Short-term budget
- B) Current budget
- C) Long-term budget
- D) None of the above

98. **Statement 1:** A provision for doubtful debts is a reserve against probable defaults from accounts receivables.

**Statement 2:** The provision for doubtful debts is a charge against Profit.

Choose correct option:

- A) Both the statements are true.
- B) Statement 1 is true, but Statement 2 is false.
- C) Statement 1 is false, but Statement 2 is true.
- D) Both the statements are false.

99. Arrange the steps of activity based costing system in sequential order

- a. Identify major activities
  - b. Assigning cost to activity cost centres
  - c. Allocating the cost of an activity to cost objects on the basis of first driver rates
  - d. Selecting caused drivers for allocating cost to cost object
- A) (c), (b), (a), (d)
  - B) (a), (b), (d), (c)
  - C) (d), (a), (b), (c)
  - D) (d), (b), (a), (c)



100. Match List I with correct option in List II

- | <b>List - I</b> | <b>List - II</b>   |
|-----------------|--|
| a. Scrap        | i. Incidental residue arising due to certain type of manufacturing process |
| b. Waste        | ii. Part of finished output which is damaged and cannot be rectified       |
| c. Defective    | iii. Goods which are damaged but can be rectified                          |
| d. Spoilage     | iv. Residue of basic raw material having no recoverable value              |
- A) a-i, b-iv, c-iii, d-ii  
B) a-ii, b-iii, c-i, d-iv  
C) a-iv, b-iii, c-ii, d-i  
D) a-iii, b-i, c-ii, d-iv

101. Which of the following is an Accounting Software:

- A) Tally  
B) Busy  
C) MS-Access  
D) Both (A) and (B)

102. **Statement 1:** All normal losses are treated as part of the cost

**Statement 2:** All abnormal losses do not form the part of cost and charged to profit and Loss Account

- A) Statement 1 is true and statement 2 is false  
B) Statement 1 is false and statement 2 is true  
C) Both the statements are false  
D) Both the statements are true

103. Cost Centre is one where managers have:

- A) Control over Profit only  
B) Control over Costs only  
C) Control over Revenue only  
D) Control over Profit, Cost and Revenue

104. GAAP stands for:

- A) Generally Accepted Accounting Principles
- B) Globally Accepted Accounting Principles
- C) Globally Adopted Accounting Principles
- D) None of the above

105. **Statement 1:** Cost accounting does not lay emphasis on controlling costs

**Statement 2:** Cost accounting provides information to cater to the requirements of all those users who are external to an organisation.

- A) Statement 1 is true and statement 2 is false
- B) Statement 1 is false and statement 2 is true
- C) Both the statements are false
- D) Both the statements are true

106. Match List I with correct option in List II

**List - I**

- a. Break even point
- b. Break even point in rupees
- c. Break evenpoint in units
- d. Break even Chart

**List - II**

- i. Indicates the relationship between costs and revenues to profit graphically
- ii. Determined by dividing the fixed cost by contribution margin ratio
- iii. Indicates the point at which company makes no profit no loss
- iv. Determined by dividing the fixed cost by contribution margin per unit

- A) a-iv, b-i, c-iii, d-ii
- B) a-iii, b-ii, c-iv, d-i
- C) a-iv, b-iii, c-ii, d-i
- D) a-iii, b-i, c-ii, d-iv

**107. Statement 1:** Inter process Profit is a concept used in Process costing.

**Statement 2:** Inter process profit represents the additional amount charged over the original cost of the product.

Choose correct option:

- A) Both the statements are true.
- B) Statement 1 is true, but Statement 2 is false.
- C) Statement 1 is false, but Statement 2 is true.
- D) Both the statements are false.

**108.** A bank passbook shows a debit balance of Rs. 24,000 on March 31<sup>st</sup> 2023. If cheques worth Rs. 8,500 are issued but not presented for payment, cheque worth Rs. 10,200 are deposited but not yet collected, and bank has levied bank charges of Rs. 300 which is not recorded in cash book, what should be the balance as per cash book?

- A) 22,500
- B) 26,000
- C) 5,000
- D) 43,000

**109. Statement 1:** An output acquired in the manufacturing operation after processing a primary product is called joint-product.

**Statement 2:** Paraffin, asphalt, and lubricant oil are some examples of joint products that are procured while crude oil exploration.

Choose correct option:

- A) Both the statements are true.
- B) Statement 1 is true, but Statement 2 is false.
- C) Statement 1 is false, but Statement 2 is true.
- D) Both the statements are false.

**110.** What does the cash flow statement intend to do?

- A) Comparison between different companies
- B) Predict future cash flows and borrowing
- C) Provide formation regarding a company's solvency, liquidity, and financial stability
- D) All of the above

111. **Statement 1:** A Trial Balance is a statement that keeps a record of the final ledger balance of all accounts in a business.

**Statement 2:** A trial balance, showing equal amount at both the debit and credit columns, indicates there is no error in the recording of transactions.

Choose correct option:

- A) Both the statements are true.
- B) Statement 1 is true, but Statement 2 is false.
- C) Statement 1 is false, but Statement 2 is true.
- D) Both the statements are false.

112. A secondary product derived from a production process, manufacturing process or chemical reaction is known as:

- A) Joint Product
- B) By-Product
- C) Waste Product
- D) None of the above

113. Match the items of List I with List II:

**List - I**

- a. Cash Book
- b. Petty Cash Book
- c. Trial Balance
- d. Bank Reconciliation Statement

**List - II**

- i. Matching bank passbook balance with bank column of cashbook
- ii. Summary of all ledger accounts.
- iii. Record small expenses such as postage, stationery, and telegrams.
- iv. Records cash receipts and payments.

- A) a-i, b-ii, c-iv, d-iii
- B) a-ii, b-i, c-iv, d-iii
- C) a-iv, b-iii, c-ii, d-i
- D) a-ii, b-iii, c-iv, d-i



114. In which of the following method the special importance is given to cost classification as fixed and variable cost:

- A) Process Costing
- B) Job Costing
- C) Unit Costing
- D) Operating Costing

115. Which of the following statements is/are incorrect about cash flow statement:

- A) Cash flow statements are useful for forming policies.
- B) The external analysis can be performed with a cash flow statement.
- C) Cash flow statement is based on cash basis of accounting
- D) None of the above

116. A tourist bus carries 25 passengers daily for 25 days and its mileage per month is 1000 kms. Calculate the passenger kms?

- A) 12,500
- B) 30,000
- C) 25,000
- D) 20,000

117. Match List I with correct option in List II

**List - I**

- a. Installed capacity
- b. Normal capacity
- c. Actual capacity
- d. Idle capacity

**List - II**

- i. Difference installed capacity and the actual capacity utilization
- ii. Practical capacity minus loss of productive capacity due to external factors.
- iii. Volume of production achieved in relation to installed capacity
- iv. Maximum productive capacity of the plant.

- A) a-i, b-ii, c-iv, d-iii
- B) a-ii, b-iii, c-i, d-iv
- C) a-iv, b-ii, c-iii, d-i
- D) a-iii, b-iv, c-ii, d-i

118. Which of the following items are excluded from the purview of GST?

- a. Luxury Cars
- b. Petroleum Products
- c. Liquor
- d. Medicines

Choose correct option:

- |                     |                     |
|---------------------|---------------------|
| A) (a) and (d)      | B) (a), (b) and (c) |
| C) (a), (c) and (d) | D) (b) and (c)      |

119. The causes of materials quantity variance does not include:

- A) Poor material handling
- B) Changes in purchase price of materials
- C) Pilferage
- D) Faulty equipment

120. Match the items of List I with List II:

- | List - I                   | List - II  |
|----------------------------|--|
| a. Current Ratio           | i. How much money a firm produces for each share of its stock              |
| b. EPS                     | ii. Comparing a company's current assets to its current liabilities        |
| c. Interest Coverage Ratio | iii. Measures how effectively a company utilises its assets to make a sale |
| d. Asset Turnover Ratio    | iv. Measures solvency of the company                                       |
| A) a-i, b-ii, c-iv, d-iii  |  |
| B) a-ii, b-iv, c-i, d-iii  |  |
| C) a-ii, b-i, c-iv, d-iii  |  |
| D) a-ii, b-iii, c-iv, d-i  |  |

## ROUGH WORK

## ROUGH WORK



## ROUGH WORK



Booklet Serial No. 217533

Test Booklet Series

TEST BOOKLET  
EDUCATION

Written Test - 2023

(41)

A

Time Allowed: Two Hours

Maximum Marks: 120

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2. Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test Booklet Series Code A, B, C or D carefully and without any omission or discrepancy at the appropriate places in the OMR Answer /Response Sheet. Any omission/discrepancy will render the Response Sheet liable for rejection.
3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside.  
*DO NOT write anything else on the Test Booklet.*
4. This Test booklet contains 120 items (questions). Each item comprises of four responses (answers). You will select the response which you want to mark on the Answer Sheet/Response Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
5. You have to mark all your responses **ONLY** on the separate Answer /Response Sheet provided. See directions in the Response Sheet.
6. All items carry equal marks.
7. Before you proceed to mark in the Answer /Response Sheet, the response to various items in the Test Booklet, you have to fill in some particulars in the Answer /Response Sheet as per instructions sent to you with your Admission Certificate.
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10. While writing Centre, Subject and Roll No. on the top of the Answer Sheet/Response Sheet in appropriate boxes use **"ONLY BALL POINT PEN"**.
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1. Match List I with List II

**List - I (Theories)**

1. Bio-ecological Model of Development
2. Stage theory of Psycho-social Development
3. Theory of Moral Development
4. Sociocultural Perspective of Development

**List - II (Psychologists)**

- a. Lev Vygotsky
- b. Lawrence Kohlberg
- c. Erick Erickson
- d. Urie Bronfenbrenner

Choose the correct answer from the option given below

- A) 1-d, 2- c, 3-b, 4-a
- B) 1-a, 2-c, 3-b, 4-d
- C) 1-a, 2-b, 3-d, 4-c
- D) 1-a, 2-b, 3-c, 4-d

2. Which of the following is not true in the context of Social cognitive theory?

- A) Cognitive factors are unnecessary in an explanation of learning
- B) Observing another person, a model, reinforced or punished, can have similar effects on the observer's behaviour
- C) Cognition has significant role in the process of learning
- D) Factors such as beliefs, expectations and perception of self, play role in learning.

3. In which stage of cognitive development, according to Piaget, children can understand conservation and organise things into actions?

- A) Sensory Motor Stage
- B) Preoperational Stage
- C) Concrete operational Stage
- D) Formal operational Stage

4. Match the List I with List II

**List - I (Types of Intelligence)**

1. Analytical, creative and practical intelligence
2. Multiple intelligence
3. Fluid and Crystallise intelligence
4. General and specific abilities

**List - II (Psychologist)**

- a. Robert Sternberg
- b. Howard Gardner
- c. Charles Spearman
- d. Raymond Cattel and John Horn

Choose the correct answer from the option given below:

- A) 1-a, 2-b, 3-d, 4-c
- B) 1-a, 2-b, 3-c, 4-d
- C) 1-d, 2-c, 3-a, 4-b
- D) 1-d, 2-c, 3-b, 4-a



5. Read the following statements about reinforcement:

**Statement I:** The process of positive or negative reinforcement always involves strengthening behaviour.

**Statement II:** The teacher can strengthen the desired behaviour by removing something aversive as soon as the behaviour occurs.

In the light of the above statements, choose the correct answer from the options given below:

- A) Both the statements I and II are false
- B) Both the statements I and II are true
- C) Statement I is true but II is false
- D) Statement II is true but I is false

6. Read the following statements about child development:

**Statement I:** Children construct their own cognitive worlds, building mental structures to adapt to the world.

**Statement II:** Cognitive experiences and stimulation do not affect a child's thought processes, intelligence, and use of language.

In the light of the above statements, choose the correct answer from the options given below:

- A) Both the statements are incorrect
- B) Statement I is correct, but statement II is incorrect
- C) Both the statements are correct
- D) Statement II is correct and I is incorrect

7. Which of the following is true in case of Componential intelligence?

- 1. Ability to analyse the information to solve the problems
- 2. Ability of a person to integrate different experiences in original way to make new discoveries and inventions
- 3. Ability of a person to think critically and analytically and succeed in study
- 4. Ability of person to deal with environmental demands encountered on daily basis
- 5. It has meta or higher order component, which involves planning concerning what to do and how to do

Choose the correct answer from the option given below:

- A) 1, 2, 3, and 5 are correct
- B) 1, 3, and 5 are correct
- C) 2, 3, and 5 are correct
- D) 2, 3, and 4 are correct

8. Metacognition is higher order knowledge about your own thinking. In this context which of the following are the most appropriate?
1. Meta cognition involves all kinds of knowledge such as declarative, procedural, and self-regulatory knowledge
  2. Meta cognition is not a strategic application to use declarative, procedural, and self-regulatory knowledge to accomplish goal and solve problems
  3. Meta cognition is an ability to manage your own cognitive processes such as comprehension and problem solving
  4. Meta cognition regulate thinking and learning, also includes knowledge about the value of applying cognitive strategies in learning
  5. Meta cognition regulate essential skills like planning, monitoring, and evaluating and we are always conscious about our routine habits and actions.

Choose the correct answer from the option given below:

- A) 1, 4, and 5
  - B) 1, 3, and 4
  - C) 2, and 4
  - D) 4 only
9. If Sujit is an emotionally intelligent person, then which of the following statement would be the most appropriate to describe him?
- A) He has ability to process information accurately, efficiently and emotionally
  - B) He is emotionally balanced and advanced level of original and creative thinking
  - C) He has strong emotions and advanced logical thinking, questioning and problem-solving behaviour
  - D) He has a set of skills that underlie accurate appraisal, expression, and regulation of emotions
10. Who founded the Person-Centred Counselling approach?
- A) Sigmund Freud
  - B) Alfred Adler
  - C) Carl Roger
  - D) Abrahm Maslow
11. Which of the following is not true in the context of Humanistic approach?
- A) It emerged in rebellion against behavioural and psychodynamic psychologists
  - B) It is alone in the major psychological approaches in emphasising the positive aspect of human nature and adopting positive attitude towards positive attitude
  - C) Individual experiences and aspects of experience like self, peak experience and spirituality are insignificant.
  - D) Many humanistic ideas particularly those bound the development of the self are extremely cultural bound, and cannot easily applied to a range of societies or historical periods.

12. Which of the following is not true in case of guidance?
1. It is continuous service required at every stage for every person
  2. It is a positive program geared to meet the need of all people
  3. It is required only in problematic situation and abnormal people
  4. It is remedial in nature helping person deal with problems and conflict in his/her life
  5. It is more information oriented and addresses the developmental issues
- Choose the correct answer from the option given below:

- A) 1 and 4
- B) 3 and 4
- C) 4 and 5
- D) 1 and 5

13. Psychotherapy emphasises on which of the following issues?
1. It does not need long term relationship with the patient focus on reconstructive change
  2. It focuses on serious problems associated with intrapsychic and internal and person issues and conflict.
  3. Trained psychotherapist is needed to aid patient in problem of living
  4. Provided in outpatient setting for minor problems of daily living
- Choose the correct answer from the option given below:

- A) 2 and 3 only
- B) 2, 3 and 4 only
- C) 1 and 4 only
- D) 1, 3 and 4 only

14. Which of the following is not a characteristics Learning disabled children?
- A) Learning disability may be observed as a distinct handicapping condition in children of average intelligence to superior intelligence
  - B) Large number of learning-disabled students are dyslexic
  - C) It refers to a heterogeneous group of disorders inherent in child
  - D) They do not have problem of poor motor coordination and poor manual dexterity

15. Match List I with list II

| List - I (Act & Policies)  | List - II (Year) |
|----------------------------|------------------|
| 1. The UNCPRD              | a. 1995          |
| 2. The Salamanca Statement | b. 2006          |
| 3. PwD -Act                | c. 1992          |
| 4. RCI-Act                 | d. 1994          |

Choose the correct answer from the option given below:

- A) 1-c, 2-d, 3-b, 4-a
- B) 1-b, 2-d, 3-a, 4-c
- C) 1-d, 2-b, 3-a, 4-c
- D) 1-b, 2-c, 3-d, 4-a



16. The National Institute for the Empowerment of Person with Intellectual Disability (NIEPID) is located at:
- Kolkata
  - New Delhi
  - Dehradun
  - Secunderabad
17. Inclusive Education for Disabled at Secondary Stage came up as an intervention in which of the following programmes?
- Sarva Shiksha Abhiyaan
  - Rastriya Madhyamik Shiksha Abhiyaan
  - National Policy on Education 1986
  - National Education Policy 2020
18. Which of the following is not true in the context of Inclusive Education?
- A process of addressing and responding to the diversity of needs of all learners through increasing participation in learning
  - It is rights based and follow the social model of disability
  - Inclusion acknowledges that learning cannot take place at every setting
  - System is changed to accommodate students with disability
19. The philosophy of inclusion has its origin in:
- Humanism
  - Pragmatism
  - Idealism
  - Naturalism

20. Match List I with List II

| List - I (Devices or Challenges) | List - II (Disability) |
|----------------------------------|------------------------|
| 1. Problem in reading            | a. Autism.             |
| 2. "Avaaj"apps                   | b. Dysgraphia          |
| 3. Deficit in written language   | c. Dyslexia            |
| 4. JAWS/DAISY Player             | d. Visual Impairment   |

Choose the correct answer from the option given below:

- 1-a, 2-d, 3-c, 4-b
- 1-b, 2-d, 3-a, 4-c
- 1-c, 2-a, 3-b, 4-d
- 1-d, 2-c, 3-a, 4-b



21. Souganya Bharat Abhiyan is a program:
- A) To make easy access to education and employment facilities to person with disabilities across India
  - B) To aware the society to create accessible physical infrastructure keeping in view the concerns of person with disabilities
  - C) To create accessible transport facilities to people with disabilities throughout the country.
  - D) To modify and upgrade three verticals for providing universal access to information and communication technology, transport, and environment.
22. Barrier-free access refers to:
- A) Universal access for all children within the school
  - B) Modification in the physical infrastructure of school
  - C) Modification in educational material, services, curriculum and teaching learning processes
  - D) Providing transport facilities to all students
23. Severe disability means:
- A) Disability with eighty percent
  - B) Disability with forty percent
  - C) Disability with hundred percent
  - D) Disability with more of multiple disabilities.
24. Which of the following documents prominently advocates inclusion of transgenders in school education?
- A) National Policy on Education, 1968
  - B) National Policy on Education, 1986
  - C) Yashpal Committee Report, 1993
  - D) National Education Policy, 2020
25. Which of the following is not related with the Right to Education Act 2009?
- A) Provision of free and compulsory education to children in the age group of 6-14
  - B) Gradual shift towards privatization of education for better facilities
  - C) Develop and implement standards for training of teachers
  - D) Ensure the entry of children of migrant family



31. Which of the following are part of curriculum's core as suggested by the National Focus Group on Curriculum, Syllabus and Textbooks (2006)?

1. Aims of education
2. Stage specific objectives
3. Principles of evaluation
4. Competencies to be evaluated
5. Medium of instruction
6. Textbook for teachers

Choose the correct answer from the option given below:

- |               |                |
|---------------|----------------|
| A) 1, 2 and 3 | B) 4, 5 and 6  |
| C) 1, 4 and 5 | D) 3, 4, and 6 |

32. Behavioural model of curriculum asserts that a subject or discipline ought to be broken down into its constituent parts which can then be expressed in terms of behavioural objectives. Such assertion raises the critique that under behavioural model:

1. Atomisation of knowledge takes place
2. Natural development of process of learning is ignored
3. Behavioural objectives become panoptic
4. Atomised objectives are useful

Choose the correct answer from the option given below:

- |            |            |
|------------|------------|
| A) 1 and 2 | B) 1 and 3 |
| C) 2 and 4 | D) 3 and 4 |

33. Considering National Curriculum Framework (NCF) – 2005, to meet the aims of education, curriculum should provide adequate experience and space for:

1. Dialogue
2. Discourse
3. Discipline
4. Dogma

Choose the correct answer from the option given below:

- |            |            |
|------------|------------|
| A) 1 and 2 | B) 3 and 4 |
| C) 1 and 4 | D) 2 and 3 |

34. Research in Curriculum Studies has expanded the understanding of 'pedagogy' as a vital part of curriculum. In this light, what novel word/s best convey the essence of pedagogy?

1. Instruction
2. Didactic
3. Discourse
4. Training

Choose the correct answer from the option given below:

- |            |            |
|------------|------------|
| A) 1 and 2 | B) Only 3  |
| C) Only 4  | D) 3 and 4 |



35. As per National Focus Group on Curriculum, Syllabus and Textbooks (2006), curriculum designing should be based on which foundational assumptions:

1. Epistemological assumptions
2. Assumptions about learning
3. Assumptions concerning the child
4. Assumptions about curriculum

Choose the correct answer from the option given below:

- A) 1, 2 and 3
- B) 1, 3 and 4
- C) 2, 3 and 4
- D) 2 and 4

36. Critical theorists in the field of curriculum studies are:

1. Michael Apple
2. Basil Bernstein
3. Henry Giroux
4. W.J. Popham

Choose the correct answer from the option given below:

- A) 1, 2 and 3
- B) 1, 2 and 4
- C) 3 and 4
- D) 2, 3 and 4

37. Author of 1924 work entitled 'How to Make a Curriculum' is?

- A) Franklin Bobbitt
- B) Werrett Charters
- C) Daniel Stufflebeam
- D) Michael Apple

38. Concept of 'spiral curriculum' was propounded by:

- A) Jerome Bruner
- B) Urie Bronfenbrenner
- C) Franklin Bobbitt
- D) Basil Bernstein

39. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R). In the light of these statements, choose the correct option:

**Assertion:** Under a bureaucratic type of leadership, leaders are bound by strict rules and regulations and they expect their employees to follow the procedures in a prompt manner.

**Reason:** The focus of a leader is laid on promoting the subordinates to the highest performances.

- A) (A) is true but (R) is false
- B) (A) is false but (R) is true
- C) Both (A) and (R) are true and (R) is the correct explanation of (A)
- D) Both (A) and (R) are true but (R) is NOT the correct explanation of (A)



40. In the light of the two statements given below, choose the correct option:

**Statement I:** The focus of shared leadership is on delegation of tasks and responsibilities in order to maximize human capacity and assist capacity building of people within schools.

**Statement II:** Instructional leadership focuses on a range of leadership behaviours and actions for involving others in decision making such as consensus making, voting, and delegation.

- A) Both Statement I and Statement II are true.
- B) Both Statement I and Statement II are false
- C) Statement I is true but Statement II is false.
- D) Statement I is false but Statement II is true.

41. In which of the following types of leadership, the relationship that exists between a leader and the follower is that of a lord and his subject?

- A) Dictatorial
- B) Autocratic
- C) Bureaucratic
- D) Feudal

42. Match List - I with List - II

**List - I (Relationship Behaviour)**

- 1. Participating Style
- 2. Delegating Style
- 3. Selling Style
- 4. Telling Style

**List - II (Task Behaviour)**

- a. Followers unable, willing, confident
- b. Followers unable, unwilling, not confident
- c. Followers able, unwilling, not confident
- d. Followers able, willing, confident

Choose the correct answer from the option given below:

- A) 1-d, 2-c, 3-b, 4-a
- B) 1-c, 2-d, 3-a, 4-b
- C) 1-a, 2-b, 3-d, 4-c
- D) 1-b, 2-a, 3-c, 4-d

43. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R). In the light of the statements, choose the correct option:

**Assertion (A):** The base behind Path-Goal theory is that effective followers clarify the path to help their leaders to move forward from their current position towards achieving the work goals.

**Reason (R):** In this process, the leader adds roadblock that occurs in the path of the followers, and makes their journey challenging.

- A) Both (A) and (R) are true and (R) is the correct explanation of (A)
- B) Both (A) and (R) are true but (R) is NOT the correct explanation of (A)
- C) (A) is true but (R) is false
- D) (A) is false but (R) is true

44. Match the following components in List I consisting the values and goals for bringing quality with List II consisting the suggested parameters and activities according to the value framework given by Prasad (2005):

**List - I (Values/Goals)**

1. Contribution to national development
2. Fostering global competencies among students
3. Promoting the use of technology
4. Quest for Excellence

**List - II (Suggested Parameters/Activities)**

- a. Development of life-skills
- b. Development of benchmarks of excellence
- c. More access with equity
- d. System Management
- e. Value integration in academic programmes

Choose the correct answer from the option given below:

- A) 1-b, 2-e, 3-a, 4-d
  - B) 1-c, 2-a, 3-d, 4-b
  - C) 1-a, 2-d, 3-b, 4-c
  - D) 1-e, 2-b, 3-c, 4-a
45. Who has defined quality in the following words: "A predictable degree of uniformity and dependability at low cost and suited to market"?
- A) W. Edwards Deming
  - B) Joseph. M. Juran
  - C) Mahesh Sarkar
  - D) Bill Conway
46. Which of the following is not amongst the six elements that plays an important role in TQM?

1. Process improvement and Total involvement
2. Reward and Recognition
3. Education and Training
4. Supportive Structure and Measurement

Choose the correct answer from the option given below:

- A) Only 1
- B) 2 and 3
- C) 3 and 4
- D) Only 4

47. Which of the following is NOT amongst the four facets of quality, which cover most of the quality dimensions that are key contributors to product quality? Quality due to \_\_\_\_\_
- A) Conformity to product design
  - B) Definition of needs for the product
  - C) Product support
  - D) Product investment

48. Given below are three statements emphasizing the concept of Six Sigma:

**Statement I:** To achieve Six Sigma from a business results perspective, waste that is generally called Content of Poor Quality (COPQ), must be reduced in order to improve net profit margins ten to thirty percent.

**Statement II:** Sigma is a Greek alphabet and is used in statistics as a measure to denote the standard variation in a process.

**Statement III:** As sigma decreases, cost of poor quality goes down while profitability, productivity and customer satisfaction go up. In the light of the above statements, choose the correct answer from the options given below:

- A) Only Statement I is true
- B) Only Statement II and Statement III are true
- C) Both Statement I and Statement II are false
- D) Both Statement I and Statement III are false

49. Match List I with List II

**List - I (Quality Gurus of TQM)**

- 1. Joseph. M. Juran
- 2. Taguchi. G
- 3. Kaoru Ishikawa
- 4. Shigeo Shingo
- 5. Armand Feiganbaum

**List - II (Their Contributory Works)**

- a. Loss Function and Robustness
- b. Zero Defect
- c. Quality Control Circles (QCCs)
- d. Customer requirement and CWQC
- e. 14 steps to implement quality programs
- f. Trilogy (Quality Planning, Quality Control and Quality Improvement)

Choose the correct answer from the option given below:

- A) 1-e, 2-c, 3-d, 4-a, 5-f
- B) 1-f, 2-a, 3-c, 4-b, 5-d
- C) 1-a, 2-d, 3-c, 4-b, 5-e
- D) 1-d, 2-b, 3-a, 4-e, 5-f

50. Which the following is not amongst the identified seven types of waste in production that should be eliminated according to the ideology behind Just-In-Time model?

- A) Over production
- B) Transportation
- C) Un needed production
- D) Work in product inventories



51. Given below are two statements regarding establishment of Quality Council of India (QCI).

**Statement I:** Quality Council of India (QCI) was established as a National body for Accreditation on recommendations of Expert Mission of EU after consultations in Inter-ministerial Task Force, Committee of Secretaries and Group of Ministers through a Cabinet decision in 1994.

**Statement II:** Accordingly, QCI was set up through a PPP model as an independent autonomous organization with the support of Government of India and the Indian Industry represented by the three premier industry associations which are ASSOCHAM, CII and FICCI.

Choose the correct answer from the options:

- A) Only Statement I is true.
  - B) Only Statement II is true.
  - C) Both Statement I and Statement II are true.
  - D) Both Statement I and Statement II are false.
52. Which educational philosophy emphasizes the importance of learning through personal experiences and problem-solving?
- A) Perennialism
  - B) Essentialism
  - C) Progressivism
  - D) Existentialism
53. Which educational philosophy proposes that ideas seldom if ever emerge simply from abstract thought alone but are partly the product of circumstances?
- A) Idealism
  - B) Pragmatism
  - C) Constructivism
  - D) Post-modernism
54. Which of the following is not necessarily concerned with indoctrination?
- A) Content
  - B) Temporality
  - C) Consequences
  - D) Intent
55. The view that argues for wisdom of the masses over the view that special knowledge and credentials should give experts special authority is:
- A) Egalitarianism
  - B) Progressivism
  - C) Dabblerism
  - D) Constructionism



56. Who among the following argued that rights have no value – individual or societal – in the absence of the education that equips citizens to enact those rights?
- A) Mary Wollstonecraft                      B) Paul Hirst  
C) J S Mill                                      D) Christine De Pizan
57. Which of the followings are true about the fundamental principles of pragmatism?
1. It believes in matter and importance of material world
  2. It upholds that power of man is supreme
  3. Problems of real life becomes ideals and values
  4. Values are not predetermined
- Choose the correct answer from the option given below:
- A) 3 and 4                                      B) 2 and 4  
C) 1 and 3                                      D) 1,2 and 4
58. According to whom, values are subjective-psychological rather than objective-natural features of experience?
- A) Rousseau                                      B) Kant  
C) Hume    D) Kohlberg
59. Which of the following statements is true regarding the idea of Henry Giroux?
- A) The politics of official knowledge are the politics of accords or compromises
- B) The dominant features of public schooling are characterized by a modernist project that has increasingly come to rely upon instrumental reason and the standardization of curricula
- C) The world that made science, and that science made, has disappeared, and scientific thought is now an archaic mode of consciousness surviving for a while yet in degraded form
- D) Scientists, technicians, and instruments are purchased not to find truth, but to augment power

60. Match List - I with List - II

**List - I ( Thinker)**

1. John Locke
2. John Dewey
3. Plato
4. Prichard

**List - II ( Definition of Knowledge)**

- a. knowledge is "justified true belief"
- b. Knowledge is 'is *sui generis*, and, as such, cannot be explained'
- c. Knowledge denotes an 'inference from evidence'
- d. Knowledge is perception of the agreement or disagreement of two ideas

Choose the correct answer from the option given below:

- A) 1-b, 2-c, 3-d, 4-a  
B) 1-c, 2-a, 3-d, 4-b  
C) 1-d, 2-c, 3-a, 4-b  
D) 1-c, 2-d, 3-b, 4-a

61. Given below are two statements with regard to 'Upanishads'.

**Statement I:** Atma (soul) is surrounded by five sheaths (*Panchakoshas*).

**Statement II:** Knowledge (Vidya) is of two categories- 'Para Vidya' and 'Apara Vidya'

In the light of the above statements, choose the correct answer from the options given below:

- A) Both the statements I and II are correct
- B) Both the statements I and II are incorrect
- C) Statement I is correct but II is incorrect
- D) Statement II is correct but I is incorrect

62. Which of the followings are relevant to Paulo Freire's idea of Education?

- 1. Critical Pedagogy
- 2. Problem-posing Education
- 3. Pedagogy of Despair
- 4. Pedagogy of the Oppressed
- 5. Critical Conscientization

Choose the correct answer from the option given below:

- A) 2,3 and 5
- B) 1 and 4
- C) 2 and 4
- D) 1,2,4 and 5

63. Given below are two statements, one is labelled as Assertion (A) and the other is labelled as Reason (R). In the light of the statements, choose the correct option:

**Assertion (A):** Education should help the students for the development of liberal mind, tolerance and critical judgment.

**Reason (R):** 'Liberal mind' opposes blind revivalism and a drastic reorganization of outlook.

- A) Both (A) and (R) are true and (R) is the correct explanation of (A)
- B) Both (A) and (R) are true but (R) is NOT the correct explanation of (A)
- C) (A) is true but (R) is false
- D) (A) is false but (R) is true

64. The statement 'knowledge is not found or discovered but rather is made by humans' is rooted in which school of thought of educational philosophy?

- A) Post-modernism
- B) Constructivism
- C) Humanism
- D) Idealism

65. The philosophical implications of the women's movement first made it on the Philosophy of Education Society (PES) program in
- A) 1962
  - B) 1972
  - C) 1952
  - D) 1978
66. According to the philosophy of Constructivism, learning is primarily a process of:
- A) Transmitting established knowledge
  - B) Memorizing facts and figures
  - C) Constructing new knowledge based on prior experiences
  - D) Conforming to societal norms
67. Which of the following is not the characteristic of interpretive paradigm of research?
- A) This paradigm primarily relies on quantitative methodology, employs experimental research methods
  - B) The basis of this paradigm is construction of inter-subjective knowledge with regard to methods, validity and scope
  - C) This paradigm uses ethnographic method of informal interview and participant observation
  - D) The knowledge construction in this paradigm is regulated by standards of trustworthiness and authenticity
68. Which of the following is not a feature of quantitative research design?
- A) The data usually collected using structured research instrument
  - B) Sample are large and outcomes are representative of the population
  - C) Given its high reliability, research studies can easily be replicated or repeated
  - D) The domain of this research design is to search the 'why', not the 'how'
69. Many studies have shown that students score higher in mathematics tests when there is classical music playing in the background. Identify independent variable:
- A) Test scores of mathematics class
  - B) Classical music in the background
  - C) Many students
  - D) There is no independent variable
70. Normal distribution can best be described as what?
- A) Skewed and non-symmetric
  - B) Symmetric and bell-shaped
  - C) Skewed and bell shaped
  - D) Skewed and U-shaped

71. Index number which tells about the difference between statistics and parameter is called
- Variance
  - Standard Deviation
  - Standard Error
  - Standard Error of Means
72. A researcher collected quantitative data) He added 2 in every score of the data set as constant. What will be the influence of this constant on variance of the data set?
- Increased by 2
  - Decreased by 2
  - Neither increased nor decreased by 2
  - Increased by 4.
73. A physical education teacher measured the length of male and female students in centimetres for calculation of correlation but the principal of the school changed the unit of measurement from centimetre to inch. Will the coefficient of correlation change?
- Yes
  - No
  - A little change
  - Drastic change
74. Which of the following is/are true about qualitative research?
- It uses more open-ended approaches.
  - In this research, the researcher relies on statistical analysis of data.
  - Research problem section is used to establish the importance of the central idea
  - Research problem section is used to direct the types of questions and hypothesis asked in the study.
- Choose the correct answer from the option given below:
- 1, 2 and 3
  - 2, 3 and 4
  - 1, 3 and 4
  - 1, 2 and 4
75. Which of the following tests is applied to find out the difference between ranks of two independent samples?
- t-test
  - Mann-Whitney U-Test
  - Spearman rank correlation
  - Pearson Product Moment Correlation.



76. A researcher did too much controlling in the experimental situation and created an artificial situation to do the experiment. What is the intention of the researcher here?
- Increase internal validity
  - Balance Validity
  - Decrease External Validity
  - Both option A and C are Correct.
77. Which of the following is true about plagiarism?
- Referring to someone else's idea
  - Turning in someone else's work as your own
  - Failing to put a quotation in quotation marks
  - Giving incorrect information about the source of a quotation
- Choose the correct answer from the option given below:
- 1, 2 and 3
  - 2, 3, and 4
  - 1, 3 and 4
  - 1, 2, and 4
78. In \_\_\_\_\_ sampling, researchers identify a small number of individuals who have the characteristics in which they are interested. These people are then used as informants to identify, or put the researchers in touch with others who qualify for inclusion and these, in turn, identify yet others.
- Purposive
  - Volunteer
  - Snowball
  - Probability
79. Which of the following is true about Action Research design?
- It utilizes only qualitative data
  - It focuses more on addressing practical problems.
  - A systematic procedure is used by the researcher in this design.
- Choose the correct answer from the option given below:
- 1 and 3
  - 1 and 2
  - 2 and 3
  - Only 2
80. Your enrolment number in the class is an example of what level of measurement?
- Nominal
  - Ordinal
  - Interval
  - Ratio

81. Fleming proposed the VARK model to classify the learners. What does VARK stand for?
- A) Visionary, Acknowledged, Rational, Knowledgeable
  - B) Verified, Authentic, Reasonable, Knowledgeable
  - C) Visual, Adaptive, Reader and Kind
  - D) Visual, Auditory, Reading & Writing, and Kinesthetic

82. Report of International Commission on Education for the 21<sup>st</sup> Century mentioned four pillars of Learning (UNESCO, 1996), these are:

- 1. Learning to know
- 2. Learning to live together
- 3. Learning to reflect
- 4. Learning to do
- 5. Learning to construct
- 6. Learning to be

Choose the correct answer from the option given below:

- A) 1, 2, 3 and 5
- B) 1, 3, 4 and 6
- C) 2, 3, 4 and 6
- D) 1, 2, 4 and 6

83. Which one of the following is not a concern of the theory of meaningful learning proposed by David Ausubel?

- A) How knowledge is organised (curriculum content)
- B) How the mind works to process new information (learning)
- C) How students learn through activities and interaction with peer group (interaction)
- D) How teachers can apply these ideas about curriculum and learning when they present new material to students (instruction)

84. Which of the following options correctly represent the purpose of the 'Design' phase in the ADDIE model of Instructional Design?

- A) Verify the desired performances and appropriate testing methods
- B) Identify the probable causes for a performance gap
- C) Generate and validate the learning resources that will be required during the life of the instructional modules
- D) Assess the quality of the instructional products and processes, both before and after implementation

85. Which of the following Creative Commons license is most accommodating by letting others to distribute, remix, adapt, and build upon your work, even commercially, as long as they credit the creator for the original creation?

- A) CC BY-NC-ND
- B) CC BY-NC-SA
- C) CC BY
- D) CC BY-SA

86. Which of the following statements is/are correct about Blogs?
1. It is an informational web page that consists of discrete units called "posts"
  2. Hyperlinks are not used in blogs to keep it more credible post
  3. By using the tag function in each post the content can be accessed thematically instead of chronologically by other users
  4. Blogs can be personal, artistic, academic, or professional
- Choose the correct answer from the option given below:
- A) Only 1, 2, and 3
  - B) Only 2, 3, and 4
  - C) Only 3, 4, and 1
  - D) Only 1 and 4
87. Which of the following is not a digital repository?
- A) e-gyankosh (IGNOU)
  - B) NROER (NCERT)
  - C) Google Classroom
  - D) OAsis
88. Which of the following is not a characteristic of cMOOCs?
- A) They are based on learning theory of Connectivism
  - B) They were characterized by teacher-centred teaching and learning
  - C) In cMOOCs, students and learners use digital platforms such as wikis, blogs, discussion forum to connect and collaborate with learning communities and other learners to create and develop concept knowledge
  - D) They embrace a decentralized, learner-centred approach
89. Web 2.0 is a:
- A) Social Web
  - B) Read only Web
  - C) Symbiotic Web
  - D) Semantic Web
90. Which of the following is not a key element of 'authentic e-learning'?
- A) Authentic task which engages learners through situation-relevant content and problem-solving pedagogy
  - B) Summative Assessment of learners is to see the extent to which the intended outcome is achieved
  - C) Reflection in which learners can get access to learning material, reflect and discuss with co-learners, experts and mentors
  - D) Authentic context which indicates how learning is connected to real-life applications putting learners through complex real-life setting



91. Which of the following statements are correct about SWAYAM? Select the correct answer from the following:

1. It is a platform to supplement the formal education system in the country only at higher education level
2. It is a platform to supplement the formal education system in the country from high school to higher education
3. UGC is the NC for developing Non- Technology PG Courses in SWAYAM platform
4. UGC has already issued the UGC (Credit Framework for online learning courses through SWAYAM) Regulation 2016 advising the Universities to identify courses where credits can be transferred on to the academic record of the students for courses done on SWAYAM

Choose the correct answer from the option given below:

- A) Only 1, 2, and 3
- B) Only 2, 3, and 4
- C) Only 3, 4, and 1
- D) Only 1 and 3

92. In NEP 2020, the current 10+2 system has been replaced by a new curricular structure. What is the new curricular structure?

- A) 4+3+3+5
- B) 4+3+3+4
- C) 5+3+3+4
- D) 10+2+3+2

93. Which of the following is not an online assessment tool?

- A) Google Forms
- B) SurveyMonkey
- C) GMeet
- D) Kahoot!

94. Which of the following aspect is a limitation of mobile learning?

- A) Flexibility in time and space
- B) Small screen size
- C) Easy access to learning materials
- D) Personalized learning experiences

95. Identify the correct sequence that represents the different stages of 5E constructivist learning cycle:

- A) Engage, Explore, Explain, Extend (or Elaborate), and Evaluate
- B) Explore, Engage, Explain, Extend (or Elaborate), and Evaluate
- C) Explore, Explain, Engage, Extend (or Elaborate), and Evaluate
- D) Engage, Explain, Explore, Extend (or Elaborate), and Evaluate



96. Which of the following statements is correct about the 'drill and practice' type of Computer Assisted Instruction (CAI)?
- A) Information is presented in small units followed by a question. The responses of learner are analysed by the computer and appropriate feedback is given
  - B) It provides opportunities for students to repeatedly practice the skills that have previously been presented and that further practice is necessary for mastery
  - C) It provides an approximation of reality that does not require the expense of real life or its risk
  - D) It helps learner develop specific problem solving skills and strategies
97. Which of the following information of an individual is categorized under 'Behavioural data' of privacy-sensitive information?
- A) User location
  - B) Credit Card Number
  - C) Family members
  - D) Online Purchases
98. In which of the following teacher education paradigm where the content of a Teacher Education Programme largely based upon the self-perceived needs and concerns of prospective teachers?
- A) Behavioristic paradigm
  - B) Personalistic paradigm
  - C) Traditional-craft paradigm
  - D) Inquiry-oriented paradigm
99. Which of the following statement is/are incorrect about the broad principles that should inform and enterprise teacher education as mentioned in the National Curriculum Framework for Teacher Education (2009)?
1. Teacher Education is integrative and eclectic
  2. Teacher Education is to be built from a particular 'school' of philosophy and psychology
  3. Teacher education as a prescriptive endeavor
  4. Teacher Education is to empower the teacher to relate himself/herself on changing contexts
- Choose the correct answer from the following options:
- A) 1, 2 and 3
  - B) 1, 3 and 4
  - C) 2, 3 and 4
  - D) Only 1 and 4

100. Which of the following statement is/are correct about Continuous Professional Development of teachers as mentioned in the National Education Policy 2020?

1. It will be offered both face to face and online mode
2. Online platforms to be developed for teachers to share ideas and best practices
3. Each teacher will be expected to participate in at least 50 hours of CPD opportunities every five year driven by their own interests
4. It should cover the latest pedagogies regarding foundational literacy and numeracy, formative and adaptive assessment of learning outcomes etc

Choose the correct answer from the following options given below:

- A) 1, 2 and 3
- B) 1, 2 and 4
- C) 1, 3 and 4
- D) 2,3 and 4

101. Which of the following statement is incorrect with respect to the idea of reflection in professional practices by Donald Schon?

- A) Professional practice is complex, unpredictable and messy
- B) Professional practices require professionals to draw on both practical experience and theory
- C) Professional practitioners need to act both intuitively and creatively.
- D) Professional practitioners need to employ technical-rationality to be successful.

102. Which of the following statement is/are correct about criteria of professionalism?

1. Professions does not provide an important public service
2. Professions involve a theoretically as well as practically grounded expertise
3. Professions never calls for expression in a code of practice
4. Professions require organisation and regulation for purposes of recruitment
5. Professional practitioners require a high degree of individual autonomy

Choose the correct answer from the following options:

- A) 1, 2 and 3
- B) 2, 3 and 4
- C) 3, 4 and 5
- D) 2, 4 and 5

103. Which of these is/are correct statement(s) in the context of Gandhi's Basic Education?

1. Gandhi ji breaking away from tradition, presented the idea that basic schools should be self-supporting in terms of food and clothing
2. Teachers generally did not teach craft work
3. Children and youth have a lot of attraction towards creative work
4. The approach of secondary schools is limited

Choose the correct answer from the option given below:

- A) Only 1
- B) Only 1, and 2
- C) Only 1,2, and 3
- D) Only 1,2, and 4

104. The role of the teacher is to:

1. Provide variety of learning situations to the learners
2. Ensure that certain group of children are engaged in learning activity
3. Discourage learners to compare, debate, share and learn from each other
4. Provide help only in the form of scaffolds

Choose the correct answer from the option given below:

- A) 1 and 2
- B) 2 and 3
- C) 3 and 4
- D) 1 and 4

105. Which of the following is true about the teachers as per National Mentoring Mission as mentioned in National Education Policy, 2020?

- A) These teachers will provide only short-term support
- B) They will help in development of policies at university level only
- C) The teachers who will have fluency in Hindi and Sanskrit only will be preferred
- D) Only Retired teachers and outstanding senior faculty will be selected to be part of this mission

106. Below are two statements. Read them carefully and choose the correct answer with the help of given options.

**Statement I-** Teacher has to recognise that learners in schools no more need teacher as a source of knowledge.

**Statement II-** Teacher needs to recognise himself or herself as a 'professional' endowed with the necessary knowledge, attitude, competence, commitment, enthusiasm, spirit of seeking new ways and means, capable of reflection.

- A) Both Statement I and Statement II are true.
- B) Both Statement I and Statement II are false.
- C) Statement I is true but Statement II is false.
- D) Statement I is false but Statement II is true.

107. Which of the following recommendations of Right to Education Act, 2009 are true in the context of teachers?

1. Filling up vacancies of teachers.
2. Prohibiting private tuitions by teachers.
3. Prohibiting deployment of teachers for all non-educational purposes.
4. Setting qualifications and working norms for teachers in all schools.

Choose the correct answer from the option given below:

- A) 1, 2 and 3
- B) 2, 3 and 4
- C) 1, 2 and 4
- D) 1, 3 and 4

108. Which of the following actions should a teacher take while teaching the 'out of school children'?
- A) Visit households during annual surveys to motivate parents to send their children to school.
  - B) Adopting teacher centered pedagogy so that students can achieve a minimum level of competencies.
  - C) Prepare a centralized curriculum for benefitting 'out of school children' of all socio-cultural backgrounds.
  - D) Administering standardized assessment tools so that the standard of all the students can be checked.

109. Teacher's identity is viewed as....

- 1. Fixed
- 2. Enacted
- 3. Negotiated
- 4. Relational

Choose the correct answer from the option given below:

- A) 1, 2 and 3
- B) 2, 3 and 4
- C) 1, 3 and 4
- D) 1, 2 and 4

110. The National Education Policy, 2020 has proposed a new Teacher Education Programme namely, Integrated Teacher Education Programme (ITEP). It talks about a total of ..... number of course/s as per school stage specialization?

- A) 1
- B) 3
- C) 8
- D) 12

111. Which education commission stated, "Citizenship in democracy is very exacting and challenging responsibility for which every citizen has to be carefully trained".

- A) New Education Policy 1986
- B) Secondary Education Commission 1953
- C) National Curriculum Framework (NCF) 2005
- D) Right to Education Act (RTE) 2009

112. According to the National Education Policy 2020, NPST stands for:

- A) National Professional Standards for Teaching
- B) National Professional Standards for Teachers
- C) National Programme of Social Transformation
- D) New Performance Standards for Teachers



113. In the light of the National Education Commission, 1964 (Kothari Commission), read the two statements given below and choose the correct options:

**Statement I:** The report aims to have inner transformation of the society in accordance with the need and aspirations of the people

**Statement II:** The report emphasises on child centred education with special emphasis on all round development of the child

- A) Statement I is correct but Statement II is incorrect
- B) Statement II is correct but Statement I is incorrect
- C) Both Statements I and II are correct
- D) Both Statements I and II are incorrect

114. Match the List I with List II:

| List -I (Recommendations)  | List-II (Policies)        |
|--|---------------------------|
| 1. Emphasis on common and neighbourhood school                       | a) NEP 2020               |
| 2. Strengthening of national identity and unity                      | b) NCESE 1988             |
| 3. Establishing clear distinction between knowledge and information  | c) Yashpal Committee 1993 |
| 4. Advocacy of cooperative learning in place of competitive learning | d) NPE 1968               |
| 5. Tenure track based promotion system                               | e. NCF 2005               |

Choose the correct answer from the option given below:

- A) 1-c, 2-a, 3-b, 4-e, 5-d
- B) 1-d, 2-b, 3-e, 4-c, 5-a
- C) 1-e, 2-c, 3-b, 4-a, 5-d
- D) 1-c, 2-d, 3-b, 4-e, 5-a

115. According to the National Education Policy, 2020, the full form of ABC is

- A) Annual Basic Certificate
- B) Academic Basic Certificate
- C) Academic Bank of Credit
- D) Annual Bank of Credit

116. The National Commission on Teachers (1983-85) envisioned the 'new teacher' as one who would communicate to the pupil on:

1. The need for a scientific attitude
2. The importance for national integration and unity
3. The need for being successful by scoring higher marks
4. The need for commitment to excellence in standards of work and action

Choose the correct answer from the option given below:

- A) Only 1, 2, 3
- B) Only 1, 2, 4
- C) Only 2, 3, 4
- D) Only 1, 3, 4

117. Read the two statements given below:

**Statement I:** All India Survey on Higher Education (AISHE) Report is published by National Council for Teacher Education (NCTE).

**Statement II:** Annual Status of Education Report (ASER) is published by the Ministry of Education, Government of India.

In the light of the above statements, choose the correct answer from the option given below:

- A) Statement I is correct but Statement II is incorrect
- B) Statement II is correct but Statement I is incorrect
- C) Both the statements I and II are correct
- D) Both the statements I and II are incorrect

118. Which of the following concern is emphasised in the National Policy for Children (1974) under ECCE?

- A) To provide maternal and child health services through primary health centres and sub-centres
- B) To provide free bicycle to children below poverty line
- C) Only government can run balwadis and day-care centres
- D) Provision for mid-day-meal to pre-primary schools run by the state governments and municipal corporations

119. Who introduced the 'Human Capital Theory'?

- A) Adam Smith
- B) Plato
- C) Mahatma Gandhi
- D) Theodore Schultz

120. What is the percentage of Gross Enrolment Ratio that has been targeted by 2035 in the NEP 2020?

- A) 40%
  - B) 50%
  - C) 60%
  - D) 70%
-

## ROUGH WORK



## ROUGH WORK

EAL

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A

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1. The scientific name of the apple pest, woolly aphis is .....

- A) *Quadraspidiotus perniciosus*
- B) *Eriosoma lanigerum*
- C) *Venturia inequalis*
- D) *Lophosternus hugelii*

2. The botanical name of mountain papaya is .....

- A) *C. papaya*
- B) *C. grandiflorus*
- C) *C. carandas*
- D) *C. candamarcensis*

3. Which of the following belongs to the family of Rutaceae ?

- i) Bael
- ii) Kamini
- iii) Ber
- iv) Karonda

The correct option is

- A) (i) and (ii)
- B) (ii) and (iii)
- C) (iii) and (iv)
- D) (i) and (iv)

4. The Superphosphate (SSP) contains ..... water-soluble phosphate

- A) 6 - 8 %
- B) 16 - 18%
- C) 26 - 28%
- D) 36 - 38%

5. The Bower system of training in Grapes is also known as

- i) Pandal system
- ii) Arbour system
- iii) Arch system
- iv) Pergola system

The correct option is

- A) (i), (ii) and (iii)
- B) (i), (ii) and (iv)
- C) (ii), (iii) and (iv)
- D) (i), (iii) and (iv)



6. Which of the following is a monoembryonic species?

- i) *Citrus medica*
- ii) *Citrus limettoides*
- iii) *Citrus jambhiri*
- iv) *Citrus grandis*

The correct option is

- A) (i) and (ii)
- B) (i) and (iii)
- C) (i) and (iv)
- D) (ii) and (iii)

7. The cross between papaya varieties Co. 2  $\times$  Sunrise Solo led to the development of a hybrid

- A) Co. 1
- B) Co. 3
- C) Co. 4
- D) Pant Papaya 1

8. The specific gravity of mature mango fruit ranges from

- A) 0.01 - 0.03
- B) 1.01 - 1.03
- C) 0.51 - 0.53
- D) 1.51 - 1.53

9. *Manilkara hexandra* is the rootstock for grafting .....

- A) Mango
- B) Sapota
- C) Apricot
- D) Fig

10. In north India, rootstock commonly used for pear is

- A) *Pyrus pashia*
- B) *Cydonia oblonga*
- C) *Pyrus pyrifolia*
- D) M27

11. Which of the following is a Long-day plant?

- A) Pineapple
- B) Passion fruit
- C) Sapota
- D) None of the above

12. The grape hybrid Arka Shyam was developed by crossing  
 A) Anab-e-Shahi × Queen of the vineyard  
 B) Black Chhampax Thompson Seedless  
 C) Bangalore Blue × Black Champa  
 D) Anab-e-Shahi × Thompson Seedless
13. Which among the following fruits, is high in energy (maximum calorific value per 100 g)  
 A) Date  
 B) Walnut  
 C) Cashew  
 D) Almond
14. Which variety of peach is self-unfruitful?  
 A) Flordagold  
 B) Flordasun  
 C) Shan-e-Punjab  
 D) J H Hale
15. Which of the following belongs to the dwarf cultivars of coconut?  
 i) Gangabondam  
 ii) Fumila  
 iii) Gangabhavani  
 iv) Manila  
**The correct option is**  
 A) (i) and (ii)  
 B) (i) and (iii)  
 C) (i) and (iv)  
 D) (ii) and (iii)
16. Blossom-end rot is a physiological disorder of .....  
 A) Litchi  
 B) Pear  
 C) Grapes  
 D) Mango
17. ICAR - National Research Centre on Pomegranate is located at  
 A) Pune  
 B) Solapur  
 C) Nagpur  
 D) Nasik
18. Botanically, the fruit of custard apple is .....  
 A) Etaerio of achenes  
 B) Etaerio of berry  
 C) Etaerio of drupe  
 D) Etaerio of follicles

19. The training method used in Walnut is  
 A) Central leader system  
 B) Modified central leader system  
 C) Open centre system  
 D) Bower system
20. The pistillate forms of Fig flowers are .....  
 i) San Pedro  
 ii) Sunrise Solo  
 iii) Smyrna  
 iv) Halawy  
**The correct option is**  
 A) (i) and (ii)  
 B) (i) and (iii)  
 C) (i) and (iv)  
 D) (ii) and (iii)
21. Which of the following fruits are highly tolerant to acidic soils (pH 5.5 - 5.0 and less)?  
 A) Raspberry  
 B) Blue berry  
 C) Fig  
 D) All of the above
22. Which of the following crops are highly salt-tolerant?  
 i) Ber  
 ii) Aonla  
 iii) Bael  
 iv) Avocado  
**The correct option is**  
 A) (i), (ii) and (iii)  
 B) (i), (ii) and (iv)  
 C) (ii), (iii) and (iv)  
 D) (i), (iii) and (iv)
23. Hypanthodium type of inflorescence is found in .....  
 A) Fig  
 B) Mulberry  
 C) Banana  
 D) Mango
24. Papaya is native of .....  
 A) Tropical America  
 B) South Africa  
 C) China  
 D) Australia

25. The name Adam's fig is suggestive of the antiquity of ..... fruit
- Mango
  - Guava
  - Banana
  - Citrus
26. Which of the following pinching methods is not practised for the commercial production of carnation flowers?
- Single pinching
  - Double pinching
  - Triple pinching
  - Pinching and a half
27. Which of the following avenue tree bears yellow flowers in leafless conditions in the summer season?
- Lagerstroemia flos-reginae*
  - Cassia fistula*
  - Spathodia companulata*
  - Magnolia grandiflora*
28. Which CAD softwares are used popularly in landscaping?
- AutoCAD
  - ArchCAD
  - LANDCADD
  - FloriCAD
- The correct option is**
- (i), (ii) and (iii)
  - (i), (ii) and (iv)
  - (ii), (iii) and (iv)
  - (i), (iii) and (iv)
29. Orange and Red LED lights (600-630 nm), used in greenhouses can result in ..... per cent more than blue LED lights (400-540 nm)
- 0-10
  - 20-30
  - 40-50
  - 60-70
30. In Japanese, hira-niwa means .....
- Sunken garden
  - Hill garden
  - Flat garden
  - Sand garden



31. According to Mughals, ..... symbolize life and youth
  - A) Fruit trees
  - B) Cypress
  - C) Seasonal flowers
  - D) Shrubs
32. Which of the following is not true about soilless media for nurseries?
  - A) Increases water holding capacity of the mixture
  - B) Provides higher cation exchange capacity
  - C) Allows easy drainage
  - D) Provides good anchorage to the young plants
33. In order to promote ventilation by thermal buoyancy during period of little wind, the green house should have a roof slope of at least
  - A) 01: 02
  - B) 01:04
  - C) 01:06
  - D) 01:08
34. Which of the following is used for dwarf protective hedge?
  - A) *Inga dulcis*
  - B) *Bougainvillea*
  - C) *Acacia farnesiana*
  - D) *Agave*
35. In PCR, with each cycle, the number of target DNA .....
  - A) Doubles
  - B) Triples
  - C) Quadruplicates
  - D) Halves
36. Which of the following is commonly called as summer cypress or burning bush?
  - A) *Kochia*
  - B) *Zinnia*
  - C) *Balsam*
  - D) *Salvia*
37. DNA markers in ornamental plants have been used for
  - A) Varietal identification
  - B) Construction of genetic linkage maps
  - C) Marker-assisted selection for traits
  - D) All of the above

38. Cut flowers should be kept at ..... percent relative humidity for maintaining turgidity
- 30- 35
  - 50- 55
  - 70- 75
  - 90- 95
39. Which of the following flowers are susceptible to chilling injury?
- Gerbera
  - Carnation
  - Anthurium
  - Antirrhinum
40. Which of the following plant is known as leather leaf fern?
- Ruscus
  - Rumohra
  - Polyscias
  - Nephrolepis
41. Which of the following are commonly used desiccants for drying ornamental plant parts?
- Silica gel
  - Alum powder
  - Aluminium sulphate
  - All of the above
42. The common pests infesting dried plant material are:
- Mice
  - Book lice
  - Silver fish
  - All of the above
43. The roots of *Rubia tinctorium* yield ..... colour dye
- White
  - Black
  - Red
  - Brown
44. Bixin, a carotenoid that is the main colouring component of annatto, has a chemical formula:
- $C_{26}H_{32}O_4$
  - $C_{25}H_{30}O_4$
  - $C_{24}H_{28}O_4$
  - $C_{23}H_{26}O_4$

45. The cross between chrysanthemum varieties Flirt  $\times$  Valentine resulted in
- i) Ravikiran
  - ii) Kirti
  - iii) Arka Ravi
  - iv) Red Gold

**The correct option is**

- A) (i) and (ii)
- B) (i) and (iii)
- C) (i) and (iv)
- D) (ii) and (iii)

46. UPOV and CPOV, respectively have their headquarters at
- A) Angers and Geneva
  - B) Geneva and Angers
  - C) Angers and Amsterdam
  - D) Amsterdam and Geneva

47. In which of the ornamental plants, DUS test guidelines are available with UPOV
- A) Rose
  - B) Aster
  - C) Cactus
  - D) All of the above

48. Which spathe colour in anthurium is absent?
- i) Coral
  - ii) Blue
  - iii) Orange
  - iv) Yellow

**The correct option is**

- A) (i) and (ii)
- B) (i) and (iii)
- C) (ii) and (iii)
- D) (ii) and (iv)

49. The interspecific cross between *Zanthedeshia rehmannii*  $\times$  *Zanthedeshia elliottianna* resulted in .....  $F_1$  hybrid

- i) Cameo
- ii) Mango
- iii) Black eyed Beauty
- iv) Gem Dark Eyes

**The correct option is**

- A) (i), (ii) and (iii)
- B) (i), (ii) and (iv)
- C) (ii), (iii) and (iv)
- D) (i), (iii) and (iv)

50. The example of autogamous flowers

- i) Gypsophila
- ii) Salvia
- iii) Clarkia
- iv) Nasturtium

The correct option is

- A) (i) and (ii)
- B) (i) and (iii)
- C) (i) and (iv)
- D) (ii) and (iii)

51. The common name of *Phaseolus vulgaris* is

- A) Kidney Bean
- B) French Bean
- C) Lima Bean
- D) Winged Bean

52. Which of the following vegetable is commercially propagated by stem cuttings?

- A) Pointed Gourd
- B) Okra
- C) Spinach
- D) Yam

53. The concentration of gibberellic acid to increase the number of female flowers in cucumbers is

- A) 10 - 25 ppm
- B) 200 - 250 ppm
- C) 300 - 350 ppm
- D) 600 - 650 ppm

54. One node per branch, two nodes per branch pruning system is associated with protected cultivation of .....

- A) Capsicum
- B) Tomato
- C) Cucumber
- D) Carnation

55. Himsona and Naveen are the varieties of ..... commonly grown under protected conditions

- A) Capsicum
- B) Tomato
- C) Cucumber
- D) Carnation



56. The promising variety of cauliflower developed from IARI, New Delhi

- i) Pusa Deepali
- ii) Pusa Mukta
- iii) Pusa Snowball I
- iv) Pusa Kartiki

The correct option is

- A) (i), (ii) and (iii)
- B) (i), (ii) and (iv)
- C) (ii), (iii) and (iv)
- D) (i), (iii) and (iv)

57. Bioflavonoid identified from onion and garlic is

- A) Allicin
- B) Garlicin
- C) Quercetin
- D) Allistalin

58. Application of which of the following minor element increases the number of flowers and fruits in brinjal?

- A) Cu
- B) Zn
- C) Mn
- D) Fe

59. The Breadfruit is native of

- A) India
- B) Malaysia
- C) Mediterranean
- D) North Western Europe

60. Jaffna is a variety of

- A) Drumstick
- B) Cassava
- C) Pointed Gourd
- D) Cumin

61. The botanical name of winged bean is  
A) *Psophocarpus tetragonolobus* L.  
B) *Phaseolus lunatus* L.  
C) *Dolichos purpureus* L.  
D) *Cyamopsis tetragonoloba* L.
62. Flowering and grain formation stages in coriander are sensitive to  
A) Heat  
B) Drought  
C) Frost  
D) None of the above
63. Bitter melon contains the health-promoting substances .....  
A) Charantin  
B) Momorcharin  
C) Vicine  
D) All of the above
64. Ideal day temperature for flowering in capsicum is  
A) 16-18 °C  
B) 26-28 °C  
C) 20-22 °C  
D) None of the above
65. Which of the following is NOT an example of European type carrot?  
A) Pusa Kulfi  
B) Pusa Yamdagini  
C) Pusa Nayanjyoti  
D) Nantes
66. The seed rate of open-pollinated chilli is  
A) 100 - 150 g/ha  
B) 200- 250 g/ ha  
C) 300 - 350 g/ha  
D) 400 - 450 g/ha

67. Which is a short-day variety of garlic?

- i) Agrifound White
- ii) Bhima Purple
- iii) Agrifound Parvati
- iv) Mukteshwar Sel 2

**The correct option is**

- A) (i) and (ii)
- B) (i) and (iii)
- C) (i) and (iv)
- D) (ii) and (iii)

68. The physiological disorder of Chinese cabbage

- A) Bolting
- B) Tip-burn
- C) Loose head
- D) All of the above

69. Arka Suguna and Arka Arunima are the varieties of

- A) Spinach
- B) Vegetable Amaranth
- C) Coriander
- D) Fenugreek

70. Which of the following variety of tomato has triple disease resistance to tomato leaf curl virus, bacterial wilt and early blight?

- A) Arka Samrat
- B) Hisar Anmol
- C) Arka Abha
- D) Kashi Vishesh

71. Which of the following is a stem vegetable crop?

- A) Cho-cho
- B) Asparagus
- C) Beetroot
- D) Vegetable marrow

72. In onion "A small, whitish sunken lesions with purple centres that rapidly enlarge" are the peculiar symptoms of.....
- Fusarium rot
  - Black mold
  - Purple Blotch
  - Downy mildew
73. 100 g of edible portion of carrot contains ..... Vitamin A
- 3150 IU
  - 6150 IU
  - 9150 IU
  - 12150 IU
74. Phomopsis blight is a serious disease of
- Tomato
  - Carrot
  - Onion
  - Brinjal
75. Which chemicals can be used for increasing the curing percentage in turmeric?
- NAA &  $\text{HNO}_3$
  - $\text{GA}_3$  &  $\text{KNO}_3$
  - NAA &  $\text{KNO}_3$
  - $\text{GA}_3$  &  $\text{HNO}_3$
76. All spice belongs to the family .....
- Rutaceae
  - Moraceae
  - Myrtaceae
  - Apocynaceae
77. Quinine is extracted from ..... plant
- Cinchona
  - Ashwagandha
  - Dioscorea
  - Primrose
78. Periwinkle is a member of ..... family
- Solanaceae
  - Apocynaceae
  - Plantaginaceae
  - Berberidaceae



79. The recovery of concrete from *Jasminum auriculatum* is
- 0.14 to 0.18%
  - 0.28 to 0.36%
  - 0.42 to 0.54%
  - 0.05 to 0.08%
80. Which plant part is mainly used for the extraction of vetiver oil?
- Bark
  - Leaves
  - Inflorescence
  - Roots
81. Which is a variety of fenugreek?
- Pusa Early Bunching
  - Mahima
  - Rio-de-Janeiro
  - Hisar Suvama
- The correct option is**
- (i) and (ii)
  - (i) and (iii)
  - (i) and (iv)
  - (ii) and (iii)
82. Japanese mint is a primary source of .....
- Methanol
  - Ethanol
  - Propanol
  - Butanol
83. The authors of the book Cultivation of Medicinal and Aromatic Crops are
- TK Bose and SK Mitra
  - BPPal and Vishnu Swaroop
  - AA Farooqi and BS Sreeramu
  - CKAtal and BMKapur
84. *Mentha spicata* L. is the botanical name of .....
- Japanese mint
  - Peppermint
  - Spearmint
  - Bergamot mint

85. Kaveri and Krishna are the high-yielding varieties of .....
- A) Lemon Grass
  - B) Khus
  - C) Kewda
  - D) Patchouli
86. Who developed the process of canning in food processing?
- A) Nicolas Appert
  - B) Hannah Glasse
  - C) Louis Pasteur
  - D) Joseph Lister
87. Which of the following fruits has the maximum content of 'riboflavin'?
- A) Pomegranate
  - B) Pineapple
  - C) Bael
  - D) Papaya
88. .... treatment helps retain the green colour of vegetables such as peas, broccoli and spinach
- A) Irradiation
  - B) Pasteurization
  - C) Blanching
  - D) Sterilization
89. Dehydration of fruits and vegetables is practised in a dehydrator at an initial temperature of .....
- A) 33 °C
  - B) 43 °C
  - C) 53 °C
  - D) 63 °C
90. SAF grades for standard chrysanthemum cut flowers are
- i) Red
  - ii) Blue
  - iii) Green
  - iv) Yellow
- The correct option is**
- A) (i), (ii) and (iii)
  - B) (i), (ii) and (iv)
  - C) (ii), (iii) and (iv)
  - D) (i), (iii) and (iv)

91. The recommended curing temperature (in °C) for potatoes is
- 0 - 5
  - 5 - 10
  - 10 - 15
  - 15 - 20
92. The oleo gum resin extracted from guggal is a ..... aromatic sap
- Off-white
  - Pale-yellow
  - Light green
  - Dark brown
93. The commonly used germicide in flower preservative
- 8-HQS
  - QAS
  - 8-HQC
  - All of the above
94. On the basis of wholesomeness, cashew kernels are sorted as
- Wholes
  - White wholes
  - Dessert wholes
  - All of the above
- The correct option is**
- (i) and (ii)
  - (i) and (iii)
  - (i) and (iv)
  - (ii) and (iii)
95. The pre-cooling temperature for prolonged vase-life of cut rose is
- 1 - 2 °C
  - 4 - 5 °C
  - 7 - 8 °C
  - 0 °C
96. The physiological disorders, blackheart in potatoes and internal browning in apples occur under
- Modified Atmospheric storage
  - Hypobaric storage
  - Hyperbaric storage
  - None of the above

97. Fruit cracking is a physiological disorder in
- A) Sweet cherry
  - B) Watermelon
  - C) Pistachio
  - D) All of the above
98. d-Carvone and d-Limonene are isolated from
- A) Dioscorea
  - B) Ergot
  - C) Dill
  - D) None of the above
99. The fruit: sugar ratio (kg) for preparing mango preserve is
- A) 25:50
  - B) 50:75
  - C) 75:100
  - D) 100:125
100. Which is a physiological disorder in Pomegranate?
- A) Sun scald
  - B) Husk scald
  - C) Chilling injury
  - D) All of the above
101. The protective coating of somatic embryos for synthetic seeds is of
- i) Calcium alginate
  - ii) Sodium alginate
  - iii) Hydrogel
  - iv) HQC
- The correct option is**
- A) (i), (ii) and (iii)
  - B) (i), (ii) and (iv)
  - C) (ii), (iii) and (iv)
  - D) (i), (iii) and (iv)
102. Triploid plants can be produced through
- A) Pollen culture
  - B) Anther culture
  - C) Embryo culture
  - D) Endosperm culture



103. .... technique was developed for systematically screening a large number of multiple combinations of media constituents for protoplast culture
- A) MDA
  - B) PDA
  - C) CPW
  - D) FLT
104. Which of the following pests is responsible for low productivity of cashewnut?
- A) Tea mosquito bug
  - B) Red cotton bug
  - C) Red palm weevil
  - D) Rhinoceros beetle
105. Which of the following fruit is a polytropic and is cultivated in temperate, subtropical and tropical areas of India?
- A) Sea Buckthorn
  - B) Strawberry
  - C) Rambutan
  - D) Chilgoza
106. Woolly aphid pest of apple can be biologically controlled by the use of .....
- A) *Aphelinus mali*
  - B) *Encarsia perniciosi*
  - C) *Trichogramma embryophagum*
  - D) *Aphytis diaspidis*
107. Which type of papaya is preferred by the commercial grower?
- A) Monoecious
  - B) Gynodioecious
  - C) Andromonoecious
  - D) Dioecious
108. Skiffing is the lightest form of pruning generally carried out in ....
- A) Litchi
  - B) Apple
  - C) Ber
  - D) Tea

109. *Chali* and *Kalipak* are important trade types of
- A) Palmyrah palm
  - B) Coconut
  - C) Areca nut
  - D) Oil palm
110. In ber, the pruning is done during .....
- A) Cold and dry season
  - B) Rainy and humid condition
  - C) Hot and dry season
  - D) Cold and humid condition
111. Rosetting of leaves in lime fruit crop due to deficiency of
- A) Iron
  - B) Magnesium
  - C) Manganese
  - D) Zinc
112. Which of the following concentrations of IBA is most effective in promoting roots in air layers of litchi?
- A) 5 ppm
  - B) 50 ppm
  - C) 500 ppm
  - D) 5000 ppm
113. The scientific name of mango mealy bug is .....
- A) *Amritodus atkinsoni*
  - B) *Drosicha stebbingi*
  - C) *Bactrocera dorsalis*
  - D) *Apsylla cistellata*
114. Which of the following annual flower is most suitable for dry flower purpose?
- A) Mexican Sunflower
  - B) Alkanet
  - C) African Daisy
  - D) Statice

115. Which of the following pair is incorrect?
- A) *Delonix regia* : Red Gulmohar
  - B) *Cassia siamea* : Yellow Gulmohar
  - C) *Peltophorum inerme*: Yellow Gulmohar
  - D) *Jacaranda mimosaeifolia*: Blue Gulmohar
116. Kukrail is a variety of .....
- A) Pepper mint
  - B) Palmarosa
  - C) Jasmine
  - D) Geranium
117. The "Sleepiness" of flower is due to .....
- A) Ethylene
  - B) Absciscic acid
  - C) Auxin
  - D) Cytokinin
118. The origin of African Marigold is .....
- A) Mexico
  - B) South Africa
  - C) China
  - D) India
119. The tree, *Brownea grandiceps* bears ..... colour flowers
- A) Red
  - B) Blue
  - C) Yellow
  - D) White
120. The secondary metabolite, Kaempferol is accumulated in the callus culture of .....
- A) *Datura pinnata*
  - B) *Cassia angustifolia*
  - C) *Morinda citrifolia*
  - D) *Dolichos lablab*

## ROUGH WORK



## ROUGH WORK

AL

**DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO**

Booklet Serial No. **218693**

**Test Booklet Series**

**TEST BOOKLET**  
**HANDLOOM AND HANDICRAFTS**  
**Written Test - 2023**  
**(48)**

**A**

**Time Allowed: Two Hours**

**Maximum Marks: 120**

**INSTRUCTIONS**

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2. Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test Booklet Series Code A, B, C or D carefully and without any omission or discrepancy at the appropriate places in the OMR Answer /Response Sheet. Any omission/discrepancy will render the Response Sheet liable for rejection.
3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside.  
**DO NOT write anything else** on the Test Booklet.
4. This Test booklet contains **120** items (questions). Each item comprises of four responses (answers). You will select the response which you want to mark on the Answer Sheet/Response Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
5. You have to mark all your responses **ONLY** on the separate Answer /Response Sheet provided. See *directions in the Response Sheet*.
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7. Before you proceed to mark in the Answer /Response Sheet, the response to various items in the Test Booklet, you have to fill in some particulars in the Answer /Response Sheet as per instructions sent to you with your Admission Certificate.
8. After you have completed filling in all your responses on the Response Sheet and the examination has concluded, you should hand over to the Invigilator **only the Answer /Response Sheet**. You are permitted to take away with you the Test Booklet and **Candidate's Copy of the Response Sheet**.
9. Sheets for rough work are appended in the Test Booklet at the end.
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**(48) (A)/2023**

**[P.T.O.]**



1. During whose reign (Shah-mir dynasty) in Kashmir several art and craft, silk and paper industry, carpet weaving, book binding even music established rich cultural development ?  
 A) Zain-ul-Abidin  
 B) Sikandar Shah Miri  
 C) Shah Mir  
 D) Fateh Shah Miri
  
2. Kashmir's Carpet weaving industry attained excellence during  
 A) Karkota Dynasty  
 B) Sikh Period  
 C) Chak Dynasty  
 D) After independence
  
3. From ancient times people of Kashmir are .....in production of handicrafts and products of aesthetics.  
 (Select to fill the blank)  
 A) Educated  
 B) Skillful  
 C) Music  
 D) Aesthetics
  
4. Based on trade connection with Central Asia, Sultan Zain-Ul-Abidin established a mahalla for paper manufacturer in his capital Nowshera, the place known as .....mahalla  
 (Select to fill the blank)  
 A) Paper  
 B) Kagaz  
 C) Kagaz-gar  
 D) Papercraft
  
5. A traditional outfit of Kashmir irrespective of gender, wearable in every season cotton/wool is  
 A) Coat  
 B) Cloak  
 C) Pheran  
 D) Tunic
  
6. On geography, political history, art and crafts of Kashmir was written by many scholars. The best known was written work by Maulavi Ghulam Hasan (1832-1898), titled  
 A) Ratnakar Purana  
 B) Gauhar-i-Alam  
 C) Bahr-Ul-Asmar  
 D) Twarikh-i-Kashmir



7. .... is an ancient and intricate craft from Kashmir which has been revived under Skill India project.  
(Select to fill the blank)
- A) Sozni
  - B) Namda Art
  - C) Handicraft
  - D) Darbar Art
8. Fine woodcarving is among the most important crafts of Kashmir. The raw material used for it is obtained from walnut tree locally known as
- A) Doon Kul
  - B) Chinar
  - C) Deodar
  - D) Kail
9. How many Kashmiri handicrafts have been officially granted with Geographical Indication (GI) tags recently to firmly establish their origin in Kashmir region?
- A) 10
  - B) 8
  - C) 7
  - D) 5
10. In Kashmir, crewel embroidery is most commonly used to embellish shawls and carpets with the most significant motif of
- A) Flowers
  - B) Chinar tree leaf
  - C) Geometric shapes
  - D) Creepers
11. Srinagar is the sixth Indian city to be part of ..... Creative Cities Network on 8<sup>th</sup> November, 2021.  
(Select to fill the blank)
- A) Jammu
  - B) Srinagar
  - C) UNESCO
  - D) UNHRC
12. Srinagar has been selected to join UCCN under the category of
- A) Textile
  - B) Craft and Folk Art
  - C) Music
  - D) Calligraphy

13. According to folk tales Willow weaving craft came to Kashmir in 19<sup>th</sup> Century when 12 kg of seeds and some fine artisans were imported to the valley of Kashmir from European countries by
- Maharaja Hari Singh
  - Maulavi Ghulam Hasan
  - Hussain Shah Chak
  - Gulab Singh
14. The raw material used for fine wood carving of Kashmir is obtained from walnut tree when it matures to an age of
- |              |              |
|--------------|--------------|
| A) 300 years | B) 100 years |
| C) 250 years | D) 50 years  |
15. Kashmiri Pashmina goes through many processes. Final stage tweezing includes clipping or brushing out irregularities in the woven piece to get rid of flaws. This finishing part is done by the expert known as
- Karigar
  - Sozankar
  - Purzgar
  - Bunkar
16. To revive the crafts, upscale the learning techniques and to improve the wage earnings of the craftsmen in Jammu and Kashmir, Directorate of Handicrafts and Handloom, Jammu introduced
- Mudra Scheme
  - Karkhandar scheme
  - Cluster Scheme
  - Carpet Scheme
17. The craft of Khatamband, geometrical pattern based elaborate ceiling work in Srinagar is a specialty of Kashmiri
- Woodcraft
  - MetalCraft
  - Mural
  - Painting
18. A geometrical design motif used in Namda craft known as 'Talhaar' is inspired from Kashmiri Woodcraft.....as the 'Tal' is a kashmiri word that means ceiling.  
(Select to fill the blank)
- Khatamband
  - Kani
  - Birch
  - Cedar

19. At finishing stage of Pashmina the fabric is treated by Purzgar in many steps. A Significant step is to rub the cloth with a dry, wiry core of gourd, bitter gourd or maize cob known as
- Kasher
  - Tweezer
  - Scrubber
  - Plucker
20. 'Namda' craft is a process of making a kind of mattress to sit on floor used in Kashmiri household made from sheep fleece said to be originated during 11<sup>th</sup> century AD, when Mughal Ruler was.
- Babar
  - Humayun
  - Jahangir
  - Akbar
21. In Namda craft before the use of contemporary card design method, traditionally wooden tool, resembling a claw-like large bow, was used to beat and set the threads in the warp. In the local dialect that was called
- Hook
  - Taana
  - Baana
  - Painja
22. The hand embroidery with colourful wool threads on Namda rugs are locally known as
- Gota
  - Kasuti
  - Banjara
  - Aari Kaam
23. For Pashmina, the fine wool comes from the undercoat of the Himalayan mountain goat, living in the remote regions of Nepal and Tibetan Plateau, called
- Chyangra
  - Bharal
  - Tahr
  - Markhor
24. Pashmina term is derived from persian word Pashm means 'Finest of wool'. Based on its fine fiber and rich quality. Pashminas are also known as.....  
(Select to fill the blank)
- Diamond Fiber
  - Silk
  - Gold Fiber
  - Queen of Silk

25. Who was the sufi mystic, came to Kashmir from Iran in 14<sup>th</sup> century AD with his followers, many of whom were craftsmen, first time adopted papier-mâché decorative art technique ?
- Mir Sayyid Ali Hamadani
  - Syed Shahabuddin
  - Syed Waheed Ashraf
  - Makhdoom Sahib
26. A century old four-story house, a heritage home celebrating architectural history of Kashmir created recently to preserve and educate future generation under a project known as
- Zoon Dub
  - Houseboat
  - Wooden Hut
  - Bait-Ul-Meeras
27. A craft of making screens of interwoven wooden laths forming intricate geometric patterns that is traditionally used in architecture in Kashmir for windows, balconies or partitions is known
- Phulkari
  - Pinjra-Kari
  - Karigari
  - Kalamkari
28. Kashmiri embroidery that uses fine needles and silk threads to adorn Pashmina Shawls or caps creating delicate stitches to weave abstract geometrical motifs and floral designs is called
- Rezkari
  - Phulkari
  - Sozni
  - Kashida
29. A Russian origin..... is now a traditional Kashmiri kettle used for brewing Kashmiri green tea 'kahwa' are made of copper with engraved Naqashi On it.  
(Select to fill the blank)
- |                |             |
|----------------|-------------|
| A) Kitchenware | B) Samovar  |
| C) Mukhi       | D) Sozankar |
30. Shalabagh a remote village in Ganderbal district is famous for craft of weaving willow baskets. The village earned the status of Model Village in 2002. People also call it Kashmir's .....  
(Select to fill the blank)
- Amalbugh
  - Mahind
  - Willow village
  - Kani Village



31. Most significant districts in Kashmir, prime contributors in the state's handicraft skill, are Srinagar, Ganderbal And.....  
(Select to fill the blank)
- A) Jammu
  - B) Mirpur
  - C) Budgam
  - D) Pulwama
32. Jammu and Kashmir handicrafts products are famous worldwide for its delicate intricacies in terms of design, Functionality and high quality.....  
(Select to fill the blank)
- A) Shape
  - B) Look
  - C) Craftsmanship
  - D) Size
33. In terms of design in the handicrafts from Jammu and Kashmir, understanding .....passed through generations for the Artisans working in any form of traditional craft.  
(Select to fill the blank)
- A) Geometry
  - B) Forms
  - C) Artists
  - D) Language
34. As an indigenous business industry of the valley, variety of baskets are made by ..... weaving and Contemporary developments have spread to make lampshades, small chairs and tables.  
(Select to fill the blank)
- A) Water Reed Grass
  - B) Willow wicker
  - C) Bamboo leaf
  - D) Wild fiber
35. Kashmiri papier-mâché has two stages of work. at..... stage base product from the pulp of paper is prepared and at Naqashi stage, traditional artists create designs using traditional motifs with paints.  
(Select to fill the blank)
- A) Sakht Sazi
  - B) Ahem
  - C) Kalib
  - D) Arij

36. The Kashmiri ..... is responsible for design development for traditional handicrafts of Jammu and Kashmir who writes the Taleem for the workflow of craftsmen to do the craft.  
(Select to fill the blank)  
A) Naqash  
B) Kaleen  
C) Julaha  
D) Kud
37. For better entrepreneurship in Handicrafts and Handloom sector, in January 2021, Directorate of Handicrafts and Handloom, Jammu, in collaboration with Indian Institute of Packaging-Mumbai, organized training workshop on  
A) Marketing  
B) Product quality  
C) Design  
D) Aesthetic Packaging
38. For walnut woodcarving craft wood can be used from ..... Of the tree for better grain  
(Select to fill the blank)  
A) Branches  
B) Root or trunk  
C) Trunk  
D) Mallet
39. Silverware craft, is one of the ancient arts of Jammu and Kashmir in which intricate design motifs are ..... on utility products made of silver.  
(Select to fill the blank)  
A) New  
B) Painted  
C) Engraved  
D) Carved
40. Chikri Woodcraft has been practiced in Jammu and Kashmir for over a century in .....region in Rajouri District which is the major center for this woodcraft.  
(Select to fill the blank)  
A) Thana Mandi  
B) Kupwara  
C) Jammu  
D) Poonch

41. ....is light honey in colour with no grains, used for making beautiful double sided comb having fine teeth that exhibit Jali work.  
(Select to fill the blank)  
A) Walnut wood  
B) Chikri wood  
C) Pine  
D) Maple
42. The ornamental beauty of walnut wood carving of Jammu and Kashmir can be seen in the famous shrines of ..... at Chare-e-Sharit and Nund Rishi in Kashmir.  
(Select to fill the blank)  
A) Noor-ud-din-Wali  
B) Amarnath  
C) Sharika Devi  
D) Vaishno Devi
43. For Walnut carving, the type of work comprising thin panels along the rim of the surface with a central motif known as  
A) Semi carving (Padri)  
B) Undercut  
C) Jali  
D) Deep carving
44. Which School of painting emerged during late 17<sup>th</sup> Century, at the town Basohli in Kathua District of Jammu and Kashmir?  
A) Basohli School  
B) Mughal School  
C) Mathura School  
D) None of the above
45. The religious themes of the Basholi school of Pahari paintings is  
A) Gita Govinda  
B) Jainism  
C) Buddhism  
D) None of the above
46. Phulkari style of embroidery is basically from Punjab for making mainly Dupattas, but in Kashmir also we find this style of work in craft items like  
A) Tents  
B) Bags  
C) Saree  
D) Apparel and home decor

47. This year in February the artisans of Sozni Embroidery attended a two day Digital Marketing workshop organized jointly by the Dept. of Handicrafts and Handlooms and PHD chamber of Commerce and Industry on the topics of
- A) Packaging
  - B) Designing
  - C) E-marketing
  - D) All of the above
48. In September 2022, to promote rural artisans, NABARD, Regional office Jammu and Kashmir organized a week-long India craft-art mela titled
- A) India Crafts
  - B) Kashmir Crafts
  - C) Art Mela
  - D) Gramya 2022
49. Artisans of Jammu and Kashmir improvised several native designs and motifs for carpet making beyond original persian influence. One of the most popular native motifs is
- A) Tree of Life
  - B) Garden
  - C) Flora fauna
  - D) None of the above
50. In first stage of making a Kashmiri paper mache craft, known as Sakht Sazi, the paper pulp is soaked in water for three or four days, then put in a stone mortar and ground so that all of the paper is uniform in its consistency. When the pulp gets dry it is mixed with a kind of rice glue called
- A) Gelatin
  - B) Atji
  - C) Acacia
  - D) Tar
51. Carpet makers of Jammu and Kashmir still continue some original motifs that are actually inspired by the Persian Art. Famous motifs among those are
- A) Hamdan
  - B) Ardabil
  - C) Kashan
  - D) All of the above
52. Department of Handicrafts and Handloom Jammu organized District Handloom Expo in Samba Fort this year. The theme of the expo was
- A) G20
  - B) My Handloom My Pride
  - C) Meri Mati
  - D) PITEX



53. Government will help to promote and develop handloom sector, by providing Marketing support for registration of crafts on e-platforms such as Flipkart, Amazon and cost of doing the same will be shared on .....basis between weavers and government.  
(Select to fill the blank)
- A) 70:30
  - B) 65:30
  - C) 50:50
  - D) 60:40
54. Fiscal Incentives for Handloom Sector introduced by the Handicraft and Handloom are specially focused for weavers to support them are
- A) The award scheme
  - B) Credit lending scheme
  - C) Education scheme
  - D) All of the above
55. Ministry of Textile, Govt. of India confers awards for vital contribution for traditional heritage. Which award is given to master craftspersons in recognition of craftsmanship, master production and the role played in the continuance of crafts to other trainee artisans.
- A) Master craftsman
  - B) Shilpa Guru
  - C) Fellowship
  - D) All of the above
56. The Awards were initiated by Ministry of Textile, Govt. of India in 2002, to celebrate the..... of the resurgence of Handicrafts in India.  
(Select to fill the blank)
- A) Foundation day
  - B) One year
  - C) Golden Jubilee
  - D) Growth
57. From which year the National Awards are being awarded for outstanding craftsmanship in different craft categories?
- A) 1965
  - B) 1947
  - C) 1975
  - D) 2000
58. Greatly known Kashmiri shawl Pashmina is made of pashm that comes from the fleece of wild Kashmiri Asian mountain goats known by its scientific name as
- A) Beetal
  - B) Jamnapari
  - C) Capra hircus
  - D) None of the above.

59. In the earliest records of Kashmir, in seventh century history..... was mentioned.  
(Select to fill the blank)
- A) Floor Mattress
  - B) Tapestry design
  - C) Silk
  - D) Kashmiri shawls
60. The hand knitted carpets locally known as .....dates back to 15<sup>th</sup> Century after which it progressively attained the high degree of perfection.  
(Select to fill the blank)
- A) Kal baffi
  - B) Darie
  - C) Mat
  - D) Matla
61. History suggests that .....(1423-1474) brought carpet weavers from Persia and central Asia in to Kashmir to train the local inhabitants.  
(Select to fill the blank)
- A) Mughals
  - B) Sultan Zain-ul-Abidin
  - C) Akbar
  - D) Babar
62. Carpet weaving normally begins from the bottom of the loom, by passing a number of .....through the warps to form a base to start from.  
(Select to fill the blank)
- |          |          |
|----------|----------|
| A) Wefts | B) Warps |
| C) Knots | D) Loops |
63. During mid-18<sup>th</sup> Century Kashmiri shawls became popular among the European elite, mainly in which country?
- A) Japan
  - B) Russia
  - C) France
  - D) England

64. Hand knotted Carpets from .....both in wool & silk yarn have attained high excellence and they rank amongst the finest in the world.  
(Select to fill the blank)
- A) 200 knots to 900 knots/sq. Inch
  - B) 300 knots/sq. Inch
  - C) 100 knots/sq. Inch
  - D) 50 knots/sq. Inch
65. Common women of Kashmir use heavy woolen dress known as
- A) Pattoo
  - B) Saree
  - C) Kurta
  - D) None of the above
66. The weaver or Wovur in Kashmiri tirelessly uses his hands and feet to weave each thread with the finest intricacy on the handloom, the weft is made from the yarn twirled into small.....  
(Select to fill the blank)
- A) Tailor
  - B) Karigar
  - C) Bobbins
  - D) Needle
67. The carpet making workplace is locally known as
- A) Silpasala
  - B) Factory
  - C) Kharkhaana
  - D) None of the above
68. Jamawar weaving from Kashmir considered to be royal, liked by Kings and nobles. 'Jama' means .....and 'war' means Yard  
(Select to fill the blank)
- |          |           |
|----------|-----------|
| A) Weave | B) Robe   |
| C) Cloth | D) Stitch |
69. A.....shawl is woven like a carpet, thread by thread, based on the coded pattern called Talim, that guides the weaver in number of warp threads to be covered in a particular coloured weft.  
(Select to fill the blank)
- A) Kani
  - B) Talim
  - C) Cotton
  - D) Jama

70. Kashmiri weaving tool, a small wooden oblong spool is known as
- A) Kalam
  - B) Kani
  - C) Ari
  - D) Dhaga
71. The carpet makers use different types of knots and in Kashmir they use two kinds of knots originally Parsian. They are namely
- A) Farsi baff and Sehna, or Sinneh
  - B) Double - warp knots
  - C) Single - warp knots
  - D) All of the above
72. The Jamawar is an adulterated form of what material, since it contains a blend of cotton and wool?
- A) Pashmina silk
  - B) Kani
  - C) Synthetic
  - D) Satin
73. As per J and K Trade and Export Policy (2018-28), under Human Resource and Skill Development programme, Skill Institutes such as the Craft Development Institute (CDI) and the Indian Institute of Carpet Technology (IICT) Srinagar intend to impart skill programs, namely, .....and Handloom Technology respectively.  
(Select to fill the blank)
- A) Craft Design Programme
  - B) Craft promotion
  - C) Design technique
  - D) Marketing
74. To preserve traditional, contemporary designs of Carpets and all other crafts of Jammu and Kashmir, Indian Institute of Carpet Technology (IICT) and Craft Development Institute (CDI) have been working tirelessly in ....., creating their design banks.  
(Select to fill the blank)
- A) Writing
  - B) Teaching
  - C) Digitizing
  - D) Researching



75. Karkhandar scheme under PM Yojana, started by Jammu and Kashmir Govt., is especially aimed to revive Kashmir's
- Textile
  - Embroidery
  - Engraving
  - Dying crafts
76. To continue the craft culture of Jammu and Kashmir 'Karkhandar' scheme has been introduced by Govt. of India to work on to ..... and Impart skill upgradation training in such crafts which are facing human resource crunch.  
(Select to fill the blank)
- Promote
  - Identify
  - Import
  - Export
77. What kind of regular marketing platform Govt. of Jammu and Kashmir is planning as strategy for craft in round-the-year exhibition to tap the tourist potential and sell their items directly to the buyers?
- Craft fair
  - Mela
  - Urban and Rural Haats
  - Online Exhibition
78. Directorates at Jammu and Kashmir, Industries & Commerce department notified a new scheme in the year 2020 to support artisans with funds focusing access to credit, interest subsidy and Self reliance. The scheme name is,
- Micro Credit Plan Scheme
  - Industry scheme
  - Credit Scheme
  - Artisan Fund Scheme
79. Massive Carpet Scheme was introduced in the J&K state in the year 1976 with the aim and objective to extend the training programme to both rural and urban areas in order to
- |                         |            |
|-------------------------|------------|
| A) Generate employment. | B) Market  |
| C) Export               | D) Funding |

80. What is the scheme started by Govt. to benefit superior craftsmanship of Jammu and Kashmir who are generating revenue involving 60 percent of households directly or indirectly, supporting 16 unique crafts, 179 Clusters and 400,000 artisans
- The revival scheme 2020
  - Cluster scheme
  - Craftsmen scheme
  - None of the above
81. In the process of revival scheme 2020, Jammu & Kashmir Entrepreneurship Development Institute (JKEDI) tying up with the corporations to encourage youth towards traditional crafts aspiring
- Start-ups
  - Entrepreneurship
  - Knowledge about traditional arts
  - All of the above
82. Under Massive carpet scheme 15 Mirzapuri training centers running 18 months of course at Jammu division to.....trainees providing with a stipend of Rs. 500 per month.  
(Select to fill the blank)
- |       |       |
|-------|-------|
| A) 15 | B) 20 |
| C) 25 | D) 50 |
83. For cooperatives in Handicrafts and Handlooms sector, Govt. of Jammu and Kashmir introduced
- Financial Support scheme
  - Managerial subsidy
  - Direct Funding
  - None of the above
84. Under the Scheme of Karkhandar in 2021, a 15 day long craft fair 'Kashmir Haat' was organized to help the crafts makers for
- Sustainable livelihood
  - Preserve rich crafts
  - Boost 'Vocal to local' mantra
  - All of the above
85. What kind of carpets from Jammu and Kashmir in particular have no parallel in quality and design both at National and International level?
- |                   |                      |
|-------------------|----------------------|
| A) Wool carpets   | B) Silk carpets      |
| C) Staple carpets | D) None of the above |

86. Which motif is used in carpet making has been inspired from popular Kashmiri Intricate woodcraft?
- A) Dabdar  
B) Gumm  
C) Khatam Band  
D) None of the above
87. Highest quality of Silk carpets which are rarely made and mostly put up for displays in museums or in exhibitions are created with number of knots per square inch
- A) 300 knots  
B) 3600 knots  
C) 20 Knots  
D) None of the above
88. The significance of Chinar tree can be felt in handicrafts of the valley be it Pashmina, Paper Mache, Houseboats or Walnut Wood carvings, the Chinar Leaf motif has become quintessential symbol of Kashmiri dentity. Stories suggest Mughals loved Chinar (even Aurangzeb) and there's a legend that Akbar ordered the tree to be irrigated with milk instead of water and declared it
- A) Golden Tree  
B) Divine tree  
C) Bodhi Tree  
D) Royal tree.
89. Fine and intricate Kashmiri craft of Zari embroidery has been very popular. It is locally known as .....embroidery and is accomplished using real Silver or Gold stitching motifs on various types of cloths.  
(Select to fill the blank)
- A) Tilla-Dozi  
B) Zari work  
C) Silk  
D) Wool
90. Kashmir carpet making has specific methodology. They are made in various sizes from 2' x 3', to 6' x 9'. Commonly carpets are made with number of knots per square inch
- A) 300 knots  
B) 50x50 knots  
C) 18x18 or 20x20 knots  
D) Any of the above
91. For quality and standard of Handicrafts and Handlooms, sectional committee meeting was held by .....with experts in Srinagar this year.  
(Select to fill the blank)
- A) Clusters  
B) Bureau of Indian Standards  
C) Weavers  
D) Artisans



92. To ensure standard quality, the Director, Handicrafts and Handloom Department Kashmir requested the experts from Bureau of Indian Standards (BIS) to Frame quality Standards for all craft products, especially those whose .....has either been done or in progress.  
(Select to fill the blank)
- A) Checking
  - B) GI certification
  - C) Customer feedback
  - D) Review
93. To help artisans for selling their craft items, the Handicrafts & Handloom department, J & K, shall soon start qualifying 12 crafts, 5 GI registered products with
- A) Promoting
  - B) Preserving
  - C) Certification and labeling
  - D) Costing
94. To ensure genuine Craft products, the department of Handicrafts & Handloom, Jammu and Kashmir has launched campaign of
- A) Testing
  - B) Checking
  - C) Review report
  - D) GI tagging/QR coding
95. In 2021, Jammu and kashmir government has constituted a Quality control Council under
- A) The Quality Control Act 1978
  - B) Industrial Disputes Act, 1947
  - C) Regulating Act 1773
  - D) None of the above
96. This year with the onset of tourist Season Enforcement Wing of Quality Control Division, Directorate of Handicrafts and Handlooms, Jammu and Kashmir have started special Inspection drives to check if the dealers are carrying on the business of notified craft items in .....to the Jammu & Kashmir Tourist Trade Act 1978  
(Select to fill the blank)
- A) Making
  - B) Conformity
  - C) Check
  - D) Right



97. Which craft from Jammu and Kashmir received Geographical Indication (GI) tag very recently?
- Chikri Woodcraft
  - Walnut Wood carving
  - Sozni work and Kani Shawl
  - All of the above
98. National Bank of Agriculture and Rural Development (NABARD) started the process for .....in consultation with Dept. of Handicrafts and Handlooms in December 2020  
(Select to fill the blank)
- GI Tagging
  - Marketing
  - Promoting
  - Selling
99. Any person engaged in practicing Handicraft Production, making any craft items, as a primary source of his living hood is known as
- Artist
  - Contractor
  - Artisan
  - All of the above
100. Beautiful and lustrous to feel Staple Carpets of are hand woven carpets that use ..... or Merchandised cotton that is silk like soft but not pure silk.  
(Select to fill the blank)
- Synthetic silk
  - Wool
  - Pure Silk
  - Raw silk
101. Jammu and Kashmir introduced Karkhandar Scheme with main Objectives of ..... the neglected crafts, collectivization for better income improve learning methods and empower with entrepreneurial Skills.  
(Select to fill the blank)
- Revitalize
  - Training
  - Renew
  - Research
102. 'The traditional handcraft sector in Kashmir, involving jobs and highly developed skills, has long been threatened by cheap imitations created outside the region.' What can be the can be sustainable solution for this.
- Training
  - Preservation
  - Trademark system
  - Promotion

103. Kashmir Pashmina has been the first craft from Jammu and Kashmir to received GI tag in the year
- A) 2005  
B) 2006  
C) 2008  
D) None of the above
104. To prevent unauthorized use of registered Geographical Indication goods by third parties, GI Tag is essential for original producers within the original geographical area with recognition because it grants
- A) Funding  
B) Legal protection  
C) Identity  
D) Collaboration
105. Silk on Cotton carpets are a blend of silk and cotton is used in a particular manner; Silk threads are used for the Weft, and cotton threads are used for the.....
- (Select to fill the blank)
- A) Weaving  
B) Knot  
C) Warp  
D) Tying
106. Craftsmanship is man's earliest technological innovation. To be really creative, one must use both his intellect and his hands at once. Craft skill can not survive unless it has a sustainable market. So, the product is meant to be.
- A) Creative  
B) Functional  
C) Decorative  
D) Colourful
107. In Jammu and Kashmir Namdha Quality Control Act, 1953, the definition of 'manufacturer' means a person who has established ..... in the Jammu and Kashmir State for making Namdhas.
- (Select to fill the blank)
- A) Trust  
B) Group  
C) Karkhana  
D) Talim
108. Jammu and Kashmir Namdha Quality Control Act, 1953 had been revised in 2010 to improve the .....of Namdha in the Jammu and Kashmir State and to make certain regulations for the same.
- (Select to fill the blank)
- A) Trade and quality  
B) Infrastructure  
C) Cost factor  
D) Working condition

109. According to Jammu and Kashmir Trade and Export policy 2018-28, What specific measure have been initiated to create product awareness about handicrafts and handlooms, beyond the traditional regions which include, Export Marketing and Management workshops and seminars.
- Mission Kashmir
  - Brand Kashmir
  - Kashmir Handicrafts
  - Kashmir Handlooms
110. Jammu Kashmir Rural Livelihood Mission (JKSRLM) in collaboration with NABARD supports self help groups for ..... start ups to promote Handicrafts and Handlooms. (Select to fill the blank)
- Community
  - Marketing
  - Craft Fair
  - Rural Mart
111. Jammu and Kashmir Government is going to introduce.....platform to link artisans and weavers of the State very soon which will enable the artisans to create virtual showroomsthrough the portal. (Select to fill the blank)
- E-Commerce
  - Selling
  - Promoting
  - Industry
112. Jammu and Kashmir is the largest producer of fine wool. The Handlooms and Handicrafts policy 2020 envisaged upon setting up of .....unit to bring down Cost of raw material for wool craftsmen. (Select to fill the blank)
- |                |                    |
|----------------|--------------------|
| A) Cotton mill | B) Wool processing |
| C) Carpet      | D) Fabric          |
113. ....is the Jammu & Kashmir's USP, the finest kind of wool which is the primary raw material for weaving of shawls and carpets. (Select to fill the blank)
- |                |                |
|----------------|----------------|
| A) Merino wool | B) Melton wool |
| C) Lambswool   | D) Raw wool    |
114. Comprehensive Handicrafts Cluster Development (CHCD) Scheme is intended to organize Handicraft sector to support growth in industry with an objective for deliverable benefits like
- |                           |                      |
|---------------------------|----------------------|
| A) Employment             | B) Earning by export |
| C) Value added production | D) All of the above  |



115. The integrated projects under Comprehensive Handicrafts Cluster Development (CHCD) Scheme will focus on Infrastructure, Boost production and .....  
(Select to fill the blank)  
A) Registration  
B) Market linkages  
C) Funding  
D) All of the above
116. Any loom that includes any hybrid loom on which at least one process for weaving requires human energy for production other than powerloom is known as  
A) Handloom  
B) Water Jet Loom  
C) Air Jet Looms  
D) None of the above
117. A village or group of contiguous villages within a radius of 5 to 10 kms having at least 100 traditional artisans specialize in specific craft, is termed as  
A) Cluster  
B) Group  
C) Sector  
D) Project
118. Karkhandar Scheme for Development of Craft Sector has been launched by the Govt. of Jammu and Kashmir for the people who work in the craft industry to advance their Learning-earning methods and foster .....skills in them.  
(Select to fill the blank)  
A) Working  
B) Management  
C) Creative  
D) Entrepreneurial
119. The items made by hand, often with the use of simple tools, and general artistic and/ or traditional in nature are collectively known as  
A) Art  
B) Crafts  
C) Handicrafts  
D) None of the above
120. As a Marketing support Department of Handicrafts organizes exhibitions in Jammu and Kashmir at potential market areas like Pahalgam, Gulmarg, Sonamarg, Katra, Udhampur and other places as a regular feature to give exposure to the artisans and manufacturers to know the consumer taste for setting their .....  
(Select to fill the blank)  
A) Shop  
B) Production  
C) Fund  
D) Design



## ROUGH WORK

AL

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24/23

1. How many strings were there in 'Vaan', the ancient musical instrument?
  - A) 33
  - B) 7
  - C) 9
  - D) 100
2. Who had adopted 'Akhtar' as his pen name in his compositions?
  - A) Firoz Khan
  - B) Mohammad Shah
  - C) Wajid Ali Shah
  - D) Nyamat Khan
3. How many varieties of Taal-s were mentioned by Bharat?
  - A) 2
  - B) 3
  - C) 4
  - D) 5
4. How many varieties of 'Geeti' were mentioned by Bharat Muni?
  - A) 2
  - B) 3
  - C) 4
  - D) 5
5. Which is the very first raga described by Ahobal in the 'Raga Prakaran'?
  - A) Mukhari
  - B) Saindhav
  - C) Dhanashri
  - D) Megh
6. Which another Dhaatu was mentioned by Pt. Sharang Dev between Dhruv and Abhog in Roopak-s of 'Saalag Sood Prabandh'?
  - A) Antar
  - B) Vibhag
  - C) Madhya
  - D) Uttar
7. Which *rasa* has not been mentioned in 'Natyashastra' by Bharat Muni?
  - A) Hasya
  - B) Shringar
  - C) Shaant
  - D) Roudra



8. Which taal does not have a rhythmic cycle of fourteen beats?
  - A) Ada Chaartaal
  - B) Jhoomra
  - C) Tilwada
  - D) Dhamaar
  
9. Which of the following Veena-s have been called as '*Pratyang*' by Bharat?
  - A) Vipanchi and Chitra
  - B) Vipanchi and Ghoshaka
  - C) Chitra and Kachchhapi
  - D) Kachchhapi and Ghoshaka
  
10. Under which 'Thaat', according to Pt. V. N. Bhatkhande, have different ragas of five different ragang-s been classified?
  - A) Khamaj
  - B) Kalyan
  - C) Bhairavi
  - D) Kafi
  
11. How many types of '*Patah*' instrument are found mentioned in ancient texts?
  - A) 2
  - B) 3
  - C) 4
  - D) 6
  
12. According to Pt. Bhatkhande, which of the following ragas may be sometimes called as '*Kalyan of morning*'?
  - A) Deshkar
  - B) Shuddh Sarang
  - C) Bilawal
  - D) Vibhas
  
13. Which female vocalist from Tamil Nadu has been awarded 'Padma Bhushan' award this year?
  - A) Vani Jairam
  - B) Suman Kalyanpur
  - C) Sudha Murty
  - D) M. S. Subbalaxmi

14. Which of the following folk wind instruments consist of a pair of flutes played simultaneously together?
- A) Algoza and Singi
  - B) Singi and Pungi
  - C) Satara and Algoza
  - D) Turahi and Algoza
15. To which gharana of Tabla did Ustad Habibuddin Khan belong?
- A) Farrukhabad
  - B) Punjab
  - C) Dilli
  - D) Ajrada
16. Which treatise has '*Kosh*', '*Ullas*' and '*Parikshan*' nouns used for chapters and sub-sections there in?
- A) Sangeetopnishatsaroddhar
  - B) Manasollas
  - C) Sangeet Raj
  - D) Sangeet samaysar
17. What is '*Tumbaki*'?
- A) A wind instrument
  - B) A Taal
  - C) A folk vocal form
  - D) A demerit of a vocalist
18. Which Taal has '*Khaali*' on third and ninth beat?
- A) Sooltaal
  - B) Ektaal
  - C) Chautaal
  - D) Ada Chaartaal
19. To which thaat does raga Malkauns belong?
- A) Asawari
  - B) Bhairavi
  - C) Kafi
  - D) Khamaaj

20. How many types of '*Varna-s*' have been mentioned in '*Sangeet Parijat*' by Pandit Ahobal?
- 4
  - 6
  - 5
  - 2
21. Which of the following sequence of '*Shruti-s*' in ascending order is not correct?
- Prasaarini, Preeti
  - Aalapini, Sandeepani
  - Maarjani, Kshiti
  - Alapini, Madanti
22. Who is the renowned exponent of Punjab gharana?
- Ustad Ahmed Jaan Thirakwa
  - Pt. Suresh Talwalkar
  - Ustad Amir Hussain Khan
  - Ustad Allarakha
23. Who was the author of '*Shrimallakshyasangeetam*'?
- Shrinivas
  - V. N. Bhatkhande
  - Jagdekmalla
  - Sudha Kalash
24. Which '*swar*' in Hindustani music corresponds to '*Chatuhshrutik Dhaivat*' of Karnatak music system?
- Shuddh Dhaivat
  - Komal Dhaivat
  - Komal Nishad
  - Shuddh Nishad
25. Who was the disciple of Pandit Balkrishna Bua Ichalkaranjkar?
- Pt. Omkarnath Thakur
  - Pt. Vishnu Narayan Bhatkhande
  - Pt. Vishnu Digambar Paluskar
  - Pt. Vinayak Rao Patwardhan

26. 'Prasannaadi' and 'Prasannaani' are the nouns used for

- A) Varieties of Sthaay
- B) Varieties of Taan-s
- C) Varieties of Moorchhana-s
- D) Varieties of Alankaar-s

27. How many prime *taal*-s are there in Karnatak music system?

- A) 3
- B) 5
- C) 7
- D) 9

28. Match List I with List II:

**List I: Hindustani *Thaat*-s**

- 1. Poorvi
- 2. Maarawa
- 3. Todi
- 4. Bilawal
- A) 1 - ii, 2 - iv, 3 - i, 4 - iii
- B) 1 - iv, 2 - i, 3 - iii, 4 - ii
- C) 1 - iv, 2 - iii, 3 - i, 4 - ii
- D) 1 - i, 2 - iv, 3 - ii, 4 - iii

**List II: Karnatak *Mela*-s**

- i. Shubhantuvanarali
- ii. Dheersankarabharan
- iii. Gamanshriya
- iv. Kaamavardhani

29. Which of the following is a *Jaati* belonging to 'Shadja Gram'?

- A) Gandhari
- B) Panchami
- C) Naishadi
- D) Aandhri

30. Who was Kudau Singh?

- A) Sarod player
- B) Veena player
- C) Pakhawaj player
- D) Dhrupad exponent



31. Who was the renowned exponent of Maihar Gharana?
- Ustad Vilayat Khan
  - Ustad Halim Jafar Khan
  - Pandit Arvind Parikh
  - Pandit Ravi Shankar
32. Which two *Dhatu-s* were omitted in a *Dwidhatu Prabandh*?
- Udgrah and Melapak
  - Dhruv and Abhog
  - Udgrah and Dhruv
  - Melapak and Abhog
33. These are two statements:
- According to Bharat, there were eighteen *Jaati-s* in ancient times.
  - Out of these, four *Jaati-s* comprised of seven swara-s, four comprised of six swara-s and ten comprised of five swara-s.
- Both the statements are correct
  - Both the statements are wrong
  - (i) is correct but (ii) is wrong
  - (i) is wrong but (ii) is correct
34. Who was the Guru of Gangubai Hangal?
- Ustad Abdul Karim Khan
  - Pandit Vinayak Rao Patwardhan
  - Pandit Balkrishn Bua Ichalkaranjkar
  - Pandit Sawai gandharv
35. Which *Dhatu* was not used in *Tridhatu prabandh-s*?
- Abhog
  - Melapak
  - Dhruv
  - Udgrah
36. According to Bharat, which *moorchhana* of *Shadja Gram* began with Pancham swar?
- Matsarikrita
  - Rajani
  - Shuddh Shadja
  - Ashwakraanta

37. Which taal has Khali on the eighth beat?
- A) Sooltaal
  - B) Tilwada
  - C) Dhamaar
  - D) Ada Chaartaal
38. How many strings did *Matta Kokila* veena had in it?
- A) 1
  - B) 21
  - C) 3
  - D) 7
39. Which treatise was authored by Pt. Damodar?
- A) Sangeet Darpan
  - B) Raga Darpan
  - C) Sangeet Samaysar
  - D) Raga Tarangini
40. What is Udbhat?
- A) A variety of Prabandh
  - B) A merit of a vocalist
  - C) A demerit of Vaggeykaar
  - D) A demerit of a vocalist
41. When did Pandit V. D Paluskar establish first Gandharva Mahavidyalaya?
- A) 5<sup>th</sup> May, 1900
  - B) 5<sup>th</sup> May, 1901
  - C) 5<sup>th</sup> March, 1902
  - D) 5<sup>th</sup> April, 1901
42. How many varieties of *Gamak* have been described by Pt. Sharang Dev?
- A) 7
  - B) 10
  - C) 12
  - D) 15
43. According to Bharat, which Veena had nine strings in it?
- A) Chitra
  - B) Ghoshak
  - C) Kachchapi
  - D) Vipanchi

44. On which shruti was '*Pancham*' swar fixed in Madhyam Gram?
- Alapini
  - Sandeepani
  - Rakta
  - Kshiti
45. Which *mela* in Karnatak music corresponds to Bhairavi Thaata in Hindustani music?
- Bhairavi
  - Todi
  - Kaamvadhani
  - Kambhoji
46. Which of the following musicologists had mentioned seven Giti-s?
- Bharat
  - Sharang Dev
  - Parshwadev
  - Matang
47. How many Mela-s were mentioned by Hriday Narayan Dev?
- 12
  - 13
  - 19
  - 23
48. Who was the son of Ustad Bade Ghulam Ali Khan?
- Mashkoor Ali Khan
  - Mudassar Ali Khan
  - Mehboob Ali Khan
  - Munawwar Ali Khan
49. Whose compositions have been published in the book *Raga Sarita*?
- Pt. Narayan Rao Vyas
  - Pt. Krishna Rao Shankar Pandit
  - Pt. Kumar Gandharv
  - Pt. C. R. Vyas
50. Who of the following had adopted the pen name '*Pran Piya*' in his compositions?
- Abdul Karim Khan
  - Vilayat Hussain Khan
  - Faiyaz Khan
  - Pt. Narayan Rao Vyas

51. Who is the author of the book 'Bhartiya Sangeet vadya'?
- A) Pt. Panna Lal Ghosh
  - B) Pt. Lalmani Mishra
  - C) Pt. Omkarnath Thakur
  - D) Vidushi Sharan Rani
52. When was Pandit Ravi Shankar born?
- A) 7<sup>th</sup> April, 1920
  - B) 11<sup>th</sup> December, 1920
  - C) 5<sup>th</sup> April, 1921
  - D) 11<sup>th</sup> December, 1921
53. Who was awarded Padma Bhushan in the year 2022?
- A) Vid. Prabha Atre
  - B) Ustad Zakir Hussain
  - C) Ustad Rashid Khan
  - D) Ms. Vani Jayram
54. Which of the following is Siddhar Khan Dhadhi associated with?
- A) Pakhawaj
  - B) Sitar
  - C) Sur Bahaar
  - D) Tabla
55. What is meant by '*Vishishtam varn sandarbham*' as mentioned in the important treatises of music?
- A) Moorchhana
  - B) Sthay
  - C) Taan
  - D) Alankar



56. In which year was Pandit Vishnu Digambar Paluskar born?
- A) 1860
  - B) 1872
  - C) 1874
  - D) 1871
57. Who was the author of 'Pranav Bharti' ?
- A) Acharya Brihaspati
  - B) Pt. Balvant Rai Bhatt
  - C) Pt. Omkarnath Thakur
  - D) Pt. V. N. Bhatkhande
58. In which year was 'Marris College of Music' established in Lucknow?
- A) 1921
  - B) 1922
  - C) 1924
  - D) 1926
59. Which of the following is the correct practice of 'Alpattwa' of a swar in a raga?
- A) By Langhan and Abhyas
  - B) By Abhyas and Alanghan
  - C) By Anabhyas and Alanghan
  - D) By Anabhyas and Langhan
60. Bhavaiya is the folk music form of which state?
- A) Bengal
  - B) Odisha
  - C) Kerala
  - D) Andhra Pradesh

61. Who was the author of Sangeet Chudamani?
- A) Someshwar
  - B) Jagdek Malla
  - C) Shrikanth
  - D) Madhav Bhatt
62. Which of the following is a semi classical musical form in Karnatak music?
- A) Pallavi
  - B) Kriti
  - C) Tillana
  - D) Javali
63. Who was the author of Anoop Ragavilas?
- A) Suhasini Koratkar
  - B) Vijay Raghav Rao
  - C) Pt. C. R. Vyas
  - D) Pt. Kumar Gandharv
64. Vidushi Sharan Rani was famous for playing which instrument?
- A) Shehnai
  - B) Santoor
  - C) Sarod
  - D) Sur Bahaar
65. Which author had mentioned 'Dwadash Swar Moorchhana' ?
- A) Parshvadev
  - B) Nanyadev
  - C) Matang
  - D) Sharangdev
66. In how many *Mela-s* has Pt. Vyankatmakhi classified different ragas?
- A) 12
  - B) 17
  - C) 19
  - D) 23

67. How many *Jati-s* of Taal-s are there in Karnatak music?
- A) 2
  - B) 4
  - C) 7
  - D) 5
68. If the frequency of Madhya Shadja is taken as 240, what will be the frequency of Komal Nishad?
- A) 432
  - B) 415
  - C) 428
  - D) 444
69. With which of the following is 'Shamya' related to?
- A) Laya
  - B) Taan
  - C) Sashabd Taal Kriya
  - D) Nishabd Taal Kriya
70. Which of the following ragas has been classified under Kafi thaat by Pt. Bhatkhande?
- A) Gaud Sarang
  - B) Chhayana
  - C) Shuddh Sarang
  - D) Malkauns
71. Which raga is derived by the moorchhana of Gandhar in raga Bhoopali?
- A) Madhmad Sarang
  - B) Durga
  - C) Deshkar
  - D) Malkauns
72. Who of the following belonged to Imdadkhani gharana?
- A) Ustad Ali Akbar Khan
  - B) Ustad Vilayat Khan
  - C) Pandit Ravi Shankar
  - D) Ustad Halim Jafar Khan

73. Raga Ahir Bhairav is a combination of which two ragas?
- A) Ahir and Bhairav
  - B) Bhairav and Khamaj
  - C) Bhairav and Kafi
  - D) Bhairav and Sarang
74. Who was the Guru of Ustad Faiyaz Khan?
- A) Nissar Hussain Khan
  - B) Ghulam Abbas Khan
  - C) Vilayat Hussain Khan
  - D) Safdar Hussain Khan
75. Which swara-a are the Vadi - Samvadi of raga Deshkar?
- A) Pancham - Shadaj
  - B) Dhaivat - Gandhar
  - C) Gandhar - Dhaivat
  - D) Pancham - Shadaj
76. Which of the following ragas does not have 'Madhyam' swar as Vadi swar?
- A) Bhimpalasi
  - B) Bageshri
  - C) Kamod
  - D) Bahaar
77. In which taal, there is 'Khali' on sixth beat?
- A) Tilwada
  - B) Jhaptaal
  - C) Ada Chartaal
  - D) Chautaal
78. Which raga does not have Audav- Sampoom 'Jaati'?
- A) Shuddh Kalyan
  - B) Bihag
  - C) Vrindavani Sarang
  - D) Bhimpalasi
79. How many Vikrit Jaatis have been mentioned in Natyashastra?
- A) 18
  - B) 7
  - C) 21
  - D) 11



80. Which raga does not end with 'Ma Ga Re Sa' phrase in its 'avaroh'?

- A) Kafi
- B) Bahaar
- C) Bhimpalasi
- D) Bageshri

81. With which instrument was 'Paagal Das' associated?

- A) Tabla
- B) Sitar
- C) Sarod
- D) Pakhawaj

82. Who of the following was the father of Pt. Samta Prasad?

- A) Pt. Bacha Mishra
- B) Pt. Kanthe Maharaj
- C) Pt. Ram Prasad
- D) Pt. Ram Sahay

83. Match List I with List II

**List I: Vocalists**

- 1. Mushtaq Hussain Khan
- 2. Kesarbai Kerkar
- 3. Jagannath Bua Purohit
- 4. Narayan Rao Vyas

- A) 1 - ii, 2 - iv, 3 - i, 4 - iii
- B) 1 - iii, 2 - i, 3 - iv, 4 - ii
- C) 1 - iv, 2 - i, 3 - ii, 4 - iii
- D) 1 - i, 2 - iii, 3 - ii, 4 - iv

**List II: Gharanas of Khwal**

- i. Jaipur - Atrauli
- ii. Gwalior
- iii. Rampur - Scheswan
- iv. Agra

84. How many types of 'Dhruva Gaan' have been described by Acharya Bharat?

- A) 2
- B) 4
- C) 5
- D) 6

85. Who is the author of 'Sangeet Chintamani' ?

- A) Narayan Rao Vyas
- B) Vinayak Rao Patwardhan
- C) V. D. Paluskar
- D) Acharya K. C. Brihaspati

86. Which taal-s have equal number of beats?
- A) Tilwada - Teentaal
  - B) Sooltaal - Ektaal
  - C) Tewra - Jhaptaal
  - D) Chautal - Jhoomra
87. How many shruti-s did Gandhar swar have in 'Gandhar gram'?
- A) 4
  - B) 3
  - C) 2
  - D) 5
88. Which moorchhana of Madhyam Gram began with Shadja swar?
- A) Kalopnata
  - B) Margi
  - C) Pouravi
  - D) Shuddh Madhya
89. How many ragas have been mentioned in Sangeet Ratnakar?
- A) 101
  - B) 264
  - C) 224
  - D) 129
90. Which text is considered to have the earliest mention of Thumri?
- A) Tohfath - ul Hind
  - B) Raga Darpan
  - C) Sangeet Makrand
  - D) Sangeet Chudamani

91. What was the pen name of Ustad Bade Ghulam Ali Khan in his compositions?
- A) Manrang
  - B) Rasrang
  - C) Premrang
  - D) Sabrang
92. How many '*Jaati-s*' of Prabandh-s have been mentioned based upon the number of Anga-s used in them?
- A) 5
  - B) 4
  - C) 3
  - D) 6
93. Whose definition of raga - '*Chaturnamapi varnanaam yoga ragah*' - has Acharya Matang quoted in '*Brihaddeshi*' ?
- A) Yashtik
  - B) Kohal
  - C) Kashyap
  - D) Dattil
94. What is represented by '+' symbol in writing taal-s in Karnatak music system?
- A) Plut
  - B) Drut
  - C) Guru
  - D) Kakpad
95. Find the odd one out of the following:
- A) Praveshiki
  - B) Naishkramiki
  - C) Antara
  - D) Sthayi
96. How many parts of '*Samgaan*' were there mentioned in ancient texts?
- A) 3
  - B) 5
  - C) 4
  - D) 9

97. Which of the following is a 'Parmelpravaeshak' raga?  
 A) Yaman  
 B) Bhairav  
 C) Multani  
 D) Bhimpalasi
98. Which of the following ragas belong to Bilawal thaat?  
 A) Gaud Sarang  
 B) Chhayana  
 C) Bihag  
 D) Bhoopali
99. How many Alankar-s have been stated by Acharya Bharat?  
 A) 66  
 B) 33  
 C) 48  
 D) 21
100. When did Pt. Vishnu Digambar Paluskar pass away?  
 A) 21<sup>st</sup> August, 1931  
 B) 21<sup>st</sup> August 1932  
 C) 21<sup>st</sup> July, 1936  
 D) 20<sup>th</sup> August, 1934
101. How many types of 'Yati' have been mentioned in Sangeet Ratnakar ?  
 A) 5  
 B) 4  
 C) 3  
 D) 2
102. Which of the following is related to 'Marg' and 'Kriya'?  
 A) Laya  
 B) Prabandh  
 C) Gamak  
 D) Taal
103. Which symbol is used below a swar to show a pause of one beat on that swar in Pt. V. D Paluskar's notation system?  
 A) -  
 B) +  
 C) o  
 D) 1



104. **Assertion:** Gwalior gharana of Khyal Gayki is one of the foremost and most popular gharanas in our country.

**Reasoning:** Great stalwarts like Ustads Haddu-Hassu Khan, Pt. Vasudev Bua Joshi, Pt. Balkrishnubuwa Ichalkaranjekar and Pt. V. D. Paluskar trained many disciples and propagated this style of Khyal singing.

- A) Both the assertion and reasoning are correct, and the reasoning explains the assertion.
- B) Both the assertion and reasoning are correct, but reasoning does not explain the assertion.
- C) The assertion is correct, but the reasoning is incorrect.
- D) The assertion is incorrect, but the reasoning is correct.

105. What is the mathematical depiction of 'Sava Gun' in numerical form?

- A)  $7/4$
- B)  $6/4$
- C)  $3/4$
- D)  $5/4$

106. What was the period of Ravindranath Tagore?

- A) May, 1861 August, 1941
- B) May, 1860 August, 1942
- C) May, 1861 August, 1940
- D) April, 1861 August, 1940

107. Which Prabandh, mentioned in Brihaddeshi, is similar to Trivat form of vocal music?

- A) Tribhangi
- B) Kaivaat
- C) Tripadi
- D) Swararth

108. Which of the following are played with a 'Bow'?

- 1. Surnai
- 2. Ravan Hattha
- 3. Chang
- 4. Sarinda
- A) 1 and 2
- B) 2 and 3
- C) 1 and 3
- D) 2 and 4

109. Who has written 'Saraswati commentary' on Pt. Sangeet Ratnakar of Sharang Dev?

- |                        |                        |
|------------------------|------------------------|
| A) Dr. Premlata Sharma | B) Thakur Jaidev Singh |
| C) Prof. R. C. Mehta   | D) Subhadra Chaudhary  |

110. Which of the following ragas have same set of swara-s used in their different melodic structure?

1. Nand
  2. Gaud sarang
  3. Yaman Kalyan
  4. Yamanibilawal
- A) 1, 2 and 3  
B) 1, 3 and 4  
C) 1, 2 and 4  
D) 1, 2, 3 and 4

111. Find the odd one out of the following:

- A) Maarawa  
B) Pooriya  
C) Hindol  
D) Sohni

112. Which raga does not have Madhyam swar as 'Vadi'?

- A) Kedar  
B) Bageshri  
C) Malkauns  
D) Darbari Kanhada

113. Which raga has Komal Rishabh swar as 'Samvadi' ?

- A) Poorvi  
B) Pooriyadhanashri  
C) Pooriya  
D) Sohni

114. Which Taal-s are not played in *drut* laya?

1. Jhoomra
  2. Ada Chaartaal
  3. Ektaal
  4. Tilwada
- A) 1 and 2  
B) 1 and 3  
C) 2 and 4  
D) 1 and 4

115. How many *vikrit* swara-s has Pandit Ahobal mentioned in Sangeet Parijat?
- A) 14
  - B) 22
  - C) 29
  - D) 8
116. Which taal is played for accompaniment with a Saadara?
- A) Tilwada
  - B) Jhaptaal
  - C) Jhoomra
  - D) Tevra
117. Which form of Hindustani music is Ghulam Nabi Shori associated with?
- A) Drut Khyal
  - B) Thumri
  - C) Raagmala
  - D) Tappa
118. What does Pt. Sharang Dev mean by the term Kuttikaar?
- A) Demerit of a vocalist
  - B) One who puts his own lyrics in others tune.
  - C) One who fails the Taal
  - D) One who doesn't play an instrument well.
119. How many strings were there in 'Mahati' Veena?
- A) 7
  - B) 9
  - C) 100
  - D) 21
120. How many *vikrit* swar have been mentioned by Bhavbhattacharya in 'Anoop Sangeet Vilas'?
- A) 42
  - B) 29
  - C) 15
  - D) 12

## ROUGH WORK



## ROUGH WORK

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