JAMMU AND KASHMIR PUBLIC SERVICE COMMISSION

RESHAM GHAR COLONY, BAKSHI NAGAR, JAMMU - 180001

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Subject: **Conduct of Written Examination for filling up of the Gazetted vacancies in the Department of Skill Development- Provisional Answer Key(s) thereof.**

Notification No. PSC/Exam/S/2024/56
Dated: 15.09.2024

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 Papers pertaining to the **written test for the post of Lecturer-I Civil Engineering, Lecturer-II (Non-Engg.) Wood Technology, Lecturer-II (Non-Engg.) Food Technology, Lecturer-II (Non-Engg.) Garment Technology, Lecturer-I Electrical Engineering, Lecturer-I Computer Engineering and Lecturer-I Architect Assistantship** held on **15.09.2024**, are hereby notified for seeking objections from candidates:

Provisional Answer Key
Lecturer-I Civil Engineering

Test Booklet Question No. (Series A)	
Q1	B
Q2	C
Q3	B
Q4	D
Q5	A
Q6	B
Q7	B
Q8	A
Q9	A
Q10	B
Q11	B

Test Booklet Question No. (Series A)	
Q12	B
Q13	B
Q14	C
Q15	C
Q16	C
Q17	B
Q18	D
Q19	B
Q20	D
Q21	D
Q22	B

Test Booklet Question No. (Series A)	
Q23	B
Q24	D
Q25	C
Q26	C
Q27	B
Q28	C
Q29	C
Q30	C
Q31	D
Q32	B
Q33	D

Test Booklet Question No. (Series A)	
Q34	C
Q35	D
Q36	A
Q37	C
Q38	B
Q39	C
Q40	D
Q41	B
Q42	C
Q43	C
Q44	C
Q45	C
Q46	D
Q47	A
Q48	B
Q49	B
Q50	D
Q51	C
Q52	B
Q53	A
Q54	A
Q55	A
Q56	B

Test Booklet Question No. (Series A)	
Q57	B
Q58	A
Q59	A
Q60	D
Q61	A
Q62	C
Q63	A
Q64	C
Q65	B
Q66	A
Q67	A
Q68	A
Q69	C
Q70	C
Q71	A
Q72	C
Q73	A
Q74	A
Q75	A
Q76	B
Q77	A
Q78	B
Q79	A

Test Booklet Question No. (Series A)	
Q80	C
Q81	C
Q82	B
Q83	D
Q84	B
Q85	D
Q86	B
Q87	A
Q88	B
Q89	A
Q90	B
Q91	B
Q92	B
Q93	D
Q94	B
Q95	D
Q96	A
Q97	B
Q98	C
Q99	A
Q100	B

Provisional Answer Key

Lecturer-II (Non-Engg.) Wood Technology

Test Booklet Question No. (Series A)	
Q1	B
Q2	B
Q3	D
Q4	C
Q5	B
Q6	C
Q7	B
Q8	B
Q9	B
Q10	A
Q11	B
Q12	B
Q13	C
Q14	B
Q15	A
Q16	D
Q17	B
Q18	D
Q19	B
Q20	A
Q21	D
Q22	B
Q23	D
Q24	C
Q25	B
Q26	D
Q27	C
Q28	D
Q29	D
Q30	B
Q31	A
Q32	D
Q33	C
Q34	C

Test Booklet Question No. (Series A)	
Q35	C
Q36	D
Q37	C
Q38	A
Q39	B
Q40	C
Q41	A
Q42	D
Q43	C
Q44	D
Q45	B
Q46	B
Q47	A
Q48	B
Q49	A
Q50	D
Q51	D
Q52	D
Q53	A
Q54	B
Q55	B
Q56	A
Q57	C
Q58	C
Q59	B
Q60	B
Q61	B
Q62	C
Q63	B
Q64	D
Q65	A
Q66	A
Q67	B
Q68	B

Test Booklet Question No. (Series A)	
Q69	A
Q70	C
Q71	D
Q72	B
Q73	D
Q74	D
Q75	A
Q76	B
Q77	D
Q78	A
Q79	D
Q80	B
Q81	A
Q82	C
Q83	B
Q84	B
Q85	D
Q86	B
Q87	B
Q88	D
Q89	C
Q90	B
Q91	B
Q92	D
Q93	C
Q94	C
Q95	D
Q96	A
Q97	B
Q98	C
Q99	D
Q100	C

Provisional Answer Key

Lecturer-II (Non-Engg.) Food Technology

Test Booklet Question No. (Series A)	
Q1	C
Q2	A
Q3	C
Q4	C
Q5	C
Q6	C
Q7	D
Q8	D
Q9	B
Q10	A
Q11	C
Q12	D
Q13	A
Q14	B
Q15	D
Q16	A
Q17	C
Q18	C
Q19	A
Q20	B
Q21	B
Q22	B
Q23	D
Q24	C
Q25	C
Q26	D
Q27	C
Q28	C
Q29	C
Q30	C
Q31	A
Q32	C
Q33	C
Q34	B

Test Booklet Question No. (Series A)	
Q35	B
Q36	D
Q37	C
Q38	B
Q39	B
Q40	B
Q41	D
Q42	A
Q43	A
Q44	B
Q45	C
Q46	A
Q47	C
Q48	A
Q49	B
Q50	C
Q51	C
Q52	A
Q53	D
Q54	A
Q55	C
Q56	C
Q57	D
Q58	D
Q59	D
Q60	B
Q61	C
Q62	A
Q63	B
Q64	C
Q65	D
Q66	D
Q67	C
Q68	D

Test Booklet Question No. (Series A)	
Q69	D
Q70	D
Q71	A
Q72	C
Q73	B
Q74	C
Q75	C
Q76	B
Q77	D
Q78	B
Q79	A
Q80	B
Q81	C
Q82	B
Q83	A
Q84	C
Q85	A
Q86	A
Q87	D
Q88	A
Q89	D
Q90	D
Q91	D
Q92	A
Q93	C
Q94	B
Q95	C
Q96	B
Q97	C
Q98	B
Q99	A
Q100	A

Provisional Answer Key

Lecturer-II (Non-Engg.) Garment Technology

Test Booklet Question No. (Series A)	
Q1	B
Q2	C
Q3	B
Q4	B
Q5	B
Q6	D
Q7	D
Q8	A
Q9	C
Q10	C
Q11	D
Q12	C
Q13	D
Q14	C
Q15	B
Q16	C
Q17	D
Q18	C
Q19	D
Q20	A
Q21	C
Q22	B
Q23	C
Q24	C
Q25	A
Q26	B
Q27	B
Q28	C
Q29	C
Q30	C
Q31	C
Q32	A
Q33	A
Q34	B

Test Booklet Question No. (Series A)	
Q35	D
Q36	B
Q37	B
Q38	A
Q39	B
Q40	D
Q41	B
Q42	C
Q43	A
Q44	A
Q45	D
Q46	B
Q47	A
Q48	C
Q49	D
Q50	A
Q51	A
Q52	C
Q53	D
Q54	A
Q55	D
Q56	C
Q57	B
Q58	B
Q59	A
Q60	A
Q61	B
Q62	D
Q63	B
Q64	C
Q65	C
Q66	A
Q67	B
Q68	C

Test Booklet Question No. (Series A)	
Q69	C
Q70	D
Q71	B
Q72	A
Q73	D
Q74	C
Q75	C
Q76	D
Q77	D
Q78	B
Q79	D
Q80	B
Q81	D
Q82	B
Q83	A
Q84	C
Q85	B
Q86	A
Q87	C
Q88	B
Q89	D
Q90	D
Q91	D
Q92	A
Q93	B
Q94	C
Q95	C
Q96	C
Q97	A
Q98	C
Q99	B
Q100	B

Provisional Answer Key
Lecturer-I Electrical Engineering

Test Booklet Question No. (Series A)	
Q1	A
Q2	A
Q3	A
Q4	A
Q5	B
Q6	A
Q7	B
Q8	C
Q9	C
Q10	D
Q11	A
Q12	A
Q13	C
Q14	D
Q15	A
Q16	A
Q17	A
Q18	A
Q19	A
Q20	A
Q21	A
Q22	A
Q23	A
Q24	A
Q25	A
Q26	D
Q27	A
Q28	A
Q29	A
Q30	A
Q31	C
Q32	A
Q33	B
Q34	A

Test Booklet Question No. (Series A)	
Q35	B
Q36	B
Q37	A
Q38	C
Q39	A
Q40	D
Q41	C
Q42	A
Q43	C
Q44	A
Q45	A
Q46	A
Q47	A
Q48	D
Q49	A
Q50	A
Q51	A
Q52	A
Q53	A
Q54	A
Q55	B
Q56	A
Q57	A
Q58	A
Q59	D
Q60	C
Q61	C
Q62	B
Q63	A
Q64	C
Q65	A
Q66	D
Q67	A
Q68	A

Test Booklet Question No. (Series A)	
Q69	A
Q70	A
Q71	A
Q72	C
Q73	D
Q74	D
Q75	D
Q76	D
Q77	B
Q78	A
Q79	C
Q80	B
Q81	C
Q82	A
Q83	C
Q84	A
Q85	D
Q86	B
Q87	C
Q88	B
Q89	D
Q90	D
Q91	C
Q92	C
Q93	C
Q94	A
Q95	A
Q96	A
Q97	D
Q98	B
Q99	A
Q100	A

Provisional Answer Key
Lecturer-I Computer Engineering

Test Booklet Question No. (Series A)	
Q1	A
Q2	A
Q3	B
Q4	B
Q5	D
Q6	B
Q7	D
Q8	C
Q9	B
Q10	B
Q11	B
Q12	D
Q13	A
Q14	B
Q15	C
Q16	B
Q17	C
Q18	B
Q19	A
Q20	A
Q21	B
Q22	B
Q23	C
Q24	D
Q25	B
Q26	A
Q27	D
Q28	B
Q29	B
Q30	C
Q31	A
Q32	D
Q33	C
Q34	A

Test Booklet Question No. (Series A)	
Q35	C
Q36	C
Q37	B
Q38	B
Q39	B
Q40	A
Q41	D
Q42	A
Q43	C
Q44	B
Q45	B
Q46	A
Q47	D
Q48	D
Q49	C
Q50	A
Q51	B
Q52	D
Q53	A
Q54	C
Q55	B
Q56	C
Q57	A
Q58	C
Q59	B
Q60	B
Q61	C
Q62	D
Q63	A
Q64	D
Q65	C
Q66	B
Q67	B
Q68	A

Test Booklet Question No. (Series A)	
Q69	B
Q70	A
Q71	C
Q72	B
Q73	D
Q74	A
Q75	D
Q76	D
Q77	D
Q78	B
Q79	C
Q80	A
Q81	A
Q82	B
Q83	B
Q84	A
Q85	A
Q86	B
Q87	D
Q88	C
Q89	A
Q90	A
Q91	B
Q92	A
Q93	C
Q94	A
Q95	B
Q96	C
Q97	C
Q98	A
Q99	A
Q100	C

Provisional Answer Key

Lecturer-I Architect Assistantship

Test Booklet Question No. (Series A)	
Q1	B
Q2	A
Q3	B
Q4	A
Q5	A
Q6	B
Q7	A
Q8	A
Q9	A
Q10	A
Q11	B
Q12	A
Q13	B
Q14	D
Q15	A
Q16	D
Q17	A
Q18	A
Q19	D
Q20	B
Q21	A
Q22	C
Q23	C
Q24	A
Q25	C
Q26	A
Q27	A
Q28	A
Q29	B
Q30	A
Q31	A
Q32	A
Q33	B
Q34	C

Test Booklet Question No. (Series A)	
Q35	A
Q36	A
Q37	D
Q38	A
Q39	A
Q40	C
Q41	B
Q42	A
Q43	A
Q44	A
Q45	A
Q46	A
Q47	B
Q48	A
Q49	A
Q50	C
Q51	C
Q52	B
Q53	C
Q54	A
Q55	C
Q56	D
Q57	A
Q58	B
Q59	A
Q60	D
Q61	A
Q62	A
Q63	D
Q64	B
Q65	A
Q66	C
Q67	A
Q68	A

Test Booklet Question No. (Series A)	
Q69	D
Q70	B
Q71	A
Q72	B
Q73	C
Q74	C
Q75	B
Q76	A
Q77	A
Q78	B
Q79	B
Q80	B
Q81	D
Q82	A
Q83	C
Q84	C
Q85	B
Q86	C
Q87	A
Q88	B
Q89	B
Q90	B
Q91	A
Q92	B
Q93	A
Q94	A
Q95	A
Q96	A
Q97	A
Q98	B
Q99	A
Q100	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 17.09.2024 to 19.09.2024. **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.**

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 19.09.2024 (Thursday), 05.00 pm**.

The provisional answer key is available on the website of the Commission http://www.jkpsc.nic.in.

15/09/24

(Sachin Jamwal) JKAS,
Controller of Examinations
J&K Public Service Commission

No. PSC/Ex-Secy/2024/42 Dated: 15.09.2024

Copy to the: -

1. Director, Information and Public Relations, 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. 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 of Lecturer-I Civil Engineering, Lecturer-II (Non-Engg.) Wood Technology, Lecturer-II (Non-Engg.) Food Technology, Lecturer-II (Non-Engg.) Garment Technology, Lecturer-I Electrical Engineering, Lecturer-I Computer Engineering and Lecturer-I Architect Assistantship on 15.09.2024

(NOTE: USE SEPARATE FORMS FOR SEPARATE QUESTIONS)

Name of the Discipline : _____

Name of the Applicant : _____

Roll No. : _____

Correspondence Address : _____

Contact/Mobile No. : _____

Date of Application: _____ 09.2024

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)
Correct Answer/Option as per candidate :			

OP

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. 230321

Test Booklet Series

A

TEST BOOKLET
CIVIL ENGINEERING
LECTURER - I
Written Test - 2024
(72)

Time Allowed: Two Hours ***Maximum Marks: 100***

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 **100** 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

1. What principle of stone masonry emphasizes the use of stones of varying sizes and shapes to create a stable and visually appealing structure?

A) Ashlar masonry.

B) Rubble masonry.

C) Coursed masonry.

D) Random masonry.

2. Sequence the steps for conducting a comprehensive economic analysis for a construction project :

1. Cost estimation.
2. Risk assessment.
3. Financial modelling.
4. Economic forecasting.

The correct sequencing is:

A) 3 - 4 - 2 - 1

B) 4 - 3 - 1 - 2

C) 2 - 1 - 3 - 4

D) 3 - 1 - 4 - 2

3. Compare the Statement I and Statement II.

Statement I : Fiber - Reinforced Concrete (FRC) is used in construction for its enhanced durability and crack resistance.

Statement II : The fibers in FRC Act as reinforcement, distributing stress and reducing the risk of cracking.

A) Both Statement I and Statement II are true, and Statement II is the correct explanation of Statement I.

B) Both Statement I and Statement II are true, and Statement II is not the correct explanation of Statement I.

C) Statement I is true, but Statement II is false.

D) Statement I is false, but Statement II is true.

4. Which of the following statements are true regarding high-strength concrete (HSC)?

i) HSC typically has a compressive strength exceeding 6000 psi.

ii) HSC is often used in the construction of bridges and high - rise buildings.

iii) HSC requires special curing techniques to achieve its desired strength.

iv) HSC is more cost - effective than standard concrete mixes.

The correct statements are:

A) ii and iii

B) ii and iv

C) i and iii

D) i and ii

5. What aspect of cost optimization involves balancing project expenses with the desired quality and performance standards?

A) Resource allocation.

B) Value engineering.

C) Risk management.

D) Sustainability analysis.

6. Match the following construction method with its primary characteristic:

Construction method	**Primary characteristic**
i) Ferrocement	1. Steel reinforcement.
ii) Reinforced concrete	2. Mesh and mortar.
iii) Masonry construction	3. Wooden beams and posts.
iv) Timber framing	4. Brick or stone units

The correct match is:

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

7. Which factor is crucial for selecting earthwork machinery to ensure optimal performance and cost - effectiveness?

A) Speed of operation.

B) Fuel efficiency

C) Equipment brand popularity.

D) Availability of spare parts.

8. Which of the following statements are true regarding lime and its use in construction?

i) Lime is often used as a binding material in mortar and plaster due to its excellent adhesion properties.

ii) Quicklime, also known as calcium oxide, is produced by heating limestone in a kiln.

iii) Hydrated lime, also known as slaked lime, is produced by adding water to quicklime.

iv) Lime exhibits high compressive strength, making it suitable for load - bearing applications in construction.

The correct statement/s is/are:

A) i, ii and iii.

B) ii and iii.

C) iii.

D) i and iv

9. Consider the following statements about types of flooring :

i) Linoleum flooring is made from natural materials and is eco-friendly.

ii) Carpet flooring is easy to clean and is suitable for high - traffic areas.

iii) Bamboo flooring is moisture - resistant but prone to scratching.

iv) Cork flooring offers excellent sound insulation properties.

The correct statements are:

A) ii and iii.

B) ii and iv

C) iii and iv.

D) i and ii.

10. When using the Program Evaluation and Review Technique (PERT), what is the significance of the optimistic, pessimistic, and most likely time estimates for project tasks?

A) They help identify the critical path in the project network.

B) They are used to calculate the expected time for each project activity.

C) They determine the resource requirements for each task.

D) They indicate the project's overall risk level.

11. Considering the complexities of modern project management, which financial metric plays a crucial role in evaluating project profitability and sustainability over time, taking into account factors such as cash flows, discount rates, and the time value of money.

A) Return On Investment (ROI).

B) Net Present Value (NPV).

C) Payback Period.

D) Internal Rate of Return (IRR).

12. Which type of pointing technique involves filling mortar joints flush with the surface of bricks or stones?

A) Weathered pointing.

B) Flush pointing.

C) Tuck pointing.

D) Struck pointing.

13. A man falling from a height h starts rotating mid - way through his fall. The vertical velocity with which he will touch the ground will be.

A) $\sqrt{2gh}$

B) Less than $\sqrt{2gh}$

C) More than $\sqrt{2gh}$

D) Less or greater but never equal to $\sqrt{2gh}$.

14. Zero work done by a system of forces acting on a body implies that

A) The resultant of the system of forces is zero.

B) The cross product of the resultant of the system of forces and the vector in the direction of motion of the body is zero.

C) The body does not have any motion.

D) The motion of the body is in the direction perpendicular to the direction of the simplest resultant of the system of forces.

15. The frictional force on the body acted upon by a force on a rough horizontal surface is

A) Always equal and opposite to the horizontal component of the force.

B) Equal and opposite to the applied force.

C) Equal and opposite to the horizontal component of the applied force if the body is at rest or moving with a constant velocity.

D) Independent of the vertical component of the force.

16. Given that there is a rectangle and a triangle, each of base b and area A, the first moment of the area of the rectangle about its base.

A) Equals the first moment of the triangular area about its base b.

B) Is more than the first moment of the triangular area about its base b.

C) Is less than the first moment of the triangular area about its base b.

D) Equals twice that of the triangular area about its base b.

17. The moment of inertia of a triangular section of base (b) and height (h) about an axis passing through its vertex and parallel to the base is ____ as that passing through its C.G. and parallel to the base.

A) Twelve times.

B) Nine times.

C) Six times.

D) Four times.

18. In a simply supported beam carrying a load whose intensity varies uniformly from zero at one end to w per unit run at the other end the maximum B.M. is equal to.

A) $\frac{wl^2}{8}$

B) $\frac{wl^2}{12}$

C) $\frac{wl^2}{24}$

D) $\frac{wl^2}{9\sqrt{3}}$

19. The relation between E (modulus of elasticity) and C (modulus of rigidity) is given by where, $\frac{1}{m}$ = Poisson's ratio.

A) $E = C\left(1+\frac{1}{m}\right)$

B) $E = 2C\left(1+\frac{1}{m}\right)$

C) $E = C\left(1+\frac{2}{m}\right)$

D) $E = 2C\left(1+\frac{2}{m}\right)$

20. A square section with side x of a beam is subjected to a shear force S, the magnitude of shear stress at the top edge of the square is

A) $\frac{1.5s}{x^2}$

B) $\frac{s}{x^2}$

C) $\frac{0.5s}{x^2}$

D) Zero.

21. A cantilever AB of length 1 carries a distributed load whose intensity varies uniformly from zero at the fixed end to w per unit run at the free end. The deflection at the free end is given as :

A) $\frac{wl^3}{48EI}$

B) $\frac{wl^4}{30EI}$

C) $\frac{6}{120} \cdot \frac{wl^4}{EI}$

D) $\frac{11}{120} \cdot \frac{wl^4}{EI}$

22. If the load passes through the shear centre of the section of the beam, then there will be.

A) No bending of the beam.

B) Only bending in the beam.

C) Bending accompanied by twisting.

D) Only twisting in the beam.

23. Match the List - I with List - II

List - I	**List - II**
i) Three - hinged arch	1. Statically indeterminate to the third degree.
ii) Two - hinged arch	2. Statically indeterminate to first degree.
iii) Hinge - less arch	3. Statically determinate.

	i	ii	iii
A)	1	2	3
B)	3	2	1
C)	2	1	3
D)	2	3	1

24. Consider the following statements in respect of arched construction made of voussoirs:

1. The superimposed load is transferred to the sidewalls only by the strength of cohesion of the mortar between the voussoirs.
2. The arch may fail under crushing when the compressive stress or thrust in it exceeds the safe crushing strength of the voussoir material.
3. Every element in the arch is subjected to compression only.
4. Failure of the arch due to the sliding of any voussoir part and adjacent one due to transverse shear can be avoided by reducing the height of the voussoirs.

Which of the above statements are correct?

A) 1 and 4 only.

B) 1 and 3 only.

C) 2 and 4 only.

D) 2 and 3 only.

25. Influence lines for any stress function are used for obtaining maximum value because of:

A) Uniform live load only.

B) Multiple point loads.

C) Single point load, uniform live load and multiple point load.

D) Unit point load only.

26. Match List - I (Admixtures) with List - II (Chemicals) and select the correct answer using the options given below :

List - I	**List - II**
i) Water - reducing admixture	1. Sulphonated melamine Formaldehyde.
ii) Air - entraining agent	2. Calcium chloride.
iii) Super plasticizer	3. Lignosulphonate.
iv) Accelerator	4. Neutralized vinsol resin

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

27. Consider the following statements:

Statement - I : There is no practical method of concrete mix design based on the specific surface area of aggregates.

Statement - II : The surface area of aggregates plays a vital role in achieving the right mix desired for a desired strength.

A) Both Statement - I and Statement - II are individually true, and Statement - II is the correct explanation of Statement - I.

B) Both Statement - I and Statement - II are individually true, and Statement - II is NOT the correct explanation of Statement - I.

C) Statement - I is true, but Statement - II is false.

D) Statement - I is false, but Statement - II is true.

28. According to IS 456-2000, the minimum grade of concrete with a maximum free water cement ratio of 0.5 and minimum cement content of 300 kg/m^3 is:

A) M20.

B) M30.

C) M25.

D) M35.

29. For earthquake - resistant design, both ends of vertical stirrups on a beam should be bent at an angle of :

A) 45°

B) 90°

C) 135°

D) 175°

30. A rectangular beam of width 200 mm and depth of 300 mm is subjected to a shear force of 200 kN. The maximum shear stress produced in the beam is :

A) 10.0 N/mm^2

B) 7.5 N/mm^2

C) 5.0 N/mm^2

D) 3.33 N/mm^2

31. The function of reinforcements in pre - stressed concrete is to :

A) Provide sufficient bond.

B) Resist tensile stresses.

C) Provide sufficient torsional resistance.

D) Provide initial compressive stress in concrete in the tension zone.

32. Minimum strength of concrete at transfer (f_{ci}), to avoid cracking of extreme fiber at a pre - stressed concrete beam with reference to limit state of serviceability, maximum compression in flexure should be:

A) $0.7\sqrt{f_{ck}}$

B) $0.5 f_{ck}$

C) $0.24\sqrt{f_{ck}}$

D) f_{ck}.

33. According to IS 800-2007, the nominal shear capacity of an M20 bolt of grade 4.6 with one shear plane passing through the bolt shank and one shear plane passing through the threaded portion is :

A) 45.27 kN.

B) 117.52 kN.

C) 56.21 kN.

D) 129.14 kN.

34. Two flats (110 mm×16 mm) and (110 mm×12 mm) are welded by double V butt weld. If permissible stress is 142 N/mm^2, the strength of the weld will be :

A) 167.75 kN.

B) 195.56 kN.

C) 187.44 kN.

D) 210.25 kN.

35. A flat of size 160 mm×10 mm is used as a tension member in a roof truss. It is connected to a gusset plate by chain bolting. Assuming yield stress as 250 N/mm^2 the design strength due to the yielding of the gross section, T_{dg} is :

A) 336.3 kN.

B) 325 kN.

C) 460 kN.

D) 363.6 kN.

36. The maximum effective slenderness ratio for a tension member in which reversal of direct stress occurs due to the loads other than wind or seismic force :

A) 180

B) 220

C) 550

D) 430

37. The shear lag effect in beam flanges is disregarded when the width of a flange with outstand supported along one edge is less than or equal to (here L_o is the length between points of zero moment in the span).

A) $\frac{L_o}{10}$

B) $\frac{L_o}{15}$

C) $\frac{L_o}{20}$

D) L_o

38. Which of the following is the recommendation for maximum hardness in drinking water by the Public Health Service Standards?

A) 300 mg/l.

B) 500 mg/l.

C) 400 mg/l.

D) 600 mg/l.

39. The Safe Drinking Water Act was established in the year _____.

A) 1984

B) 1982

C) 1974

D) 1975

40. Consider the following statements :

Assertion (A) : Pathogens are native to aquatic systems.

Reason (R) : They require an animal host for growth and reproduction.

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.

41. In the catabolic process, oxidation reactions are more efficient because of which of the following reasons?

1. They release greater amounts of energy.
2. They release lesser amounts of energy.
3. The end products are stable compounds.

The correct answer/s is/are:

A) 1 and 2 only.

B) 1 only.

C) 1, 2 and 3.

D) 2 only.

42. Match the following types of pipes with their properties.

1.	Cast iron pipes	i.	Life up to 100 years.
2.	Wrought iron and steel pipes	ii.	Durable and heavier.
3.	Hume steel pipes	iii.	Cement mortar coating.
4.	Concrete pipes	iv.	Lighter sections.

The correct match is:

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

43. Which of the following properties do not change with time for discrete particles in the settling process?

1. Size
2. Shape.
3. Specific gravity.

The correct answer/s is/are:

A) 1 and 2 only.

B) 3 only.

C) 1, 2 and 3.

D) 2 and 3 only.

44. Consider the following statements given below :

Statement I : Flocculation process relies on turbulence to promote collisions.

Statement II : Velocity gradients are a convenient way of measuring turbulence.

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.

45. Which of the following is/are the process/ess used to soften water with high magnesium hardness?

1. Ion exchange process.
2. Recarbonation process.
3. Split - treatment process.

The correct answer/s is/are:

A) 1 and 3 only.

B) 2 only.

C) 3 only.

D) 1, 2 and 3.

46. In the chlorination process, at low concentrations, chlorine probably kills microorganisms by penetrating the cell and reacting with the enzymes and protoplasm. At higher concentrations, oxidation of the cell wall will destroy the organism. The process is affected by which of the following factors?

1. Type of organism.
2. Contact time.
3. Concentration.
4. Form of chlorine.

How many answers are correct?

A) Only one.

B) Only two.

C) Only three.

D) All four.

47. Consider the following statements regarding factors to be considered in the design of the sewer ;

1. Selection of minimum and maximum velocities.
2. Estimation of wastewater design flow rates.
3. Amount of leakage.

The correct statement/s is/are:

A) 1 and 2 only.
B) 2 only
C) 1 and 3 only
D) 2 and 3 only.

48. Which of the following are important characteristics of the medium used in trickling filters?

1. Specific surface area.
2. Temperature.
3. Porosity.

The correct answer/s is/are:

A) 1 and 2 only.
B) 1 and 3 only.
C) 2 and 3 only.
D) 1, 2 and 3.

49. Identify the correct match.

	Particles		**Formation**
1.	Smoke	-	By incomplete combustion of organic particles.
2.	Fumes	-	By condensation of vapours of solid materials.
3.	Flyash	-	By atomization of pesticides and herbicides.
4.	Spray	-	Are non - combustible particles during coal combustion

How many match/es is/are correct?

A) Only one match.
B) Only two matches.
C) Only Three matches.
D) All the four matches.

50. Which of the following is/are the options suitable for the ultimate disposal of wastewater sludge?

1. Incineration.
2. Sanitary landfill.
3. Soil conditioner.

The correct answer/s is/are:

A) 3 only.

B) 2 and 3 only.

C) 1 and 2 only.

D) 1, 2 and 3.

51. Consider the following statements regarding the flow of fluids and electricity ;

1. The non - conductors are analogous to fixed boundaries.
2. Electrical current is analogous to the velocity of flow.

The correct statement/s is/are:

A) 1 only.

B) 2 only.

C) Both.

D) Neither.

52. Identify the correct match.

	Turbine		**Specific speed**
1.	Pelton Wheel with single jet	-	8.5 to 30
2.	Pelton wheel with multiple jets	-	30 to 51
3.	Kaplan Turbine.	-	51 to 225.
4.	Francis Turbine	-	225 to 860.

How many match/es is/are correct?

A) Only one match.

B) Only two matches.

C) Only three matches.

D) All the four matches.

53. Consider the following statements :

Assertion (A) : The measured maximum velocity in ordinary channels usually appears to occur below the free surface at a distance of 0.05 to 0.25 of the depth.

Reason (R) : Owing to the presence of a free surface and the friction along the channel wall, the velocities in a channel are not uniformly distributed in the channel section.

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.

54. A stone weighs 400 N in air and 200 N in water. The volume of the stone is

A) 0.02 m^3.

B) 2.00 m^3.

C) 40 m^3.

D) 0.004 m^3.

55. When a fluid jet strikes a stationary semi - circular vane at the centre, the force exerted on the vane in the direction of the flow of the jet is

A) Twice that exerted on a flat plate.

B) Half of that exerted on a flat plate.

C) Thrice that exerted on a flat plate.

D) Equal to that exerted on a flat plate.

56. A hydraulic press has a ram 200 mm in diameter and a plunger 20 mm in diameter. Then the force required on the plunger to raise a load of 25 kN is.

A) 25 N.

B) 250 N.

C) 250 kN.

D) 500 kN.

57. Identify the correct match, with reference to loss of energy in flow through pipes.

1.	Sudden contraction	-	$0.5\ V^2/(2g)$.
2.	Entrance to a pipe	-	$V^2/(2g)$.
3.	Exit from a pipe	-	$0.5\ V^2/(2g)$.
4.	Bends	-	$kV^2/(2g)$.

How many match/es is/are correct?

A) Only one match.
B) Only two matches.
C) Only three matches.
D) All the four matches.

58. Consider the following statements :

Assertion (A) : A negative slip may occur in a reciprocating pump.

Reason (R) : Actual discharge is more than theoretical discharge when the suction valve remains open during the delivery stroke of the piston.

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.

59. Friction velocity is given by the expression, $V_f =$

A) $\sqrt{(gRS)}$
B) $\sqrt{(2gH)}$
C) $\sqrt{(2g)}$
D) $\sqrt{(2gS)}$

60. If the model prototype ratio is 1:75, then the ratio of discharge per unit width of the spillway is given by

A) $\left(\frac{1}{75}\right)^{1/2}$

B) $\left(\frac{1}{75}\right)$

C) $\left(\frac{1}{75}\right)^{1/3}$

D) $\left(\frac{1}{75}\right)^{3/2}$

61. Match the type of notch/weir with their expression for discharge :

Notch/weir		Discharge
i)	Rectangular	1. $\frac{2}{3}C_d\sqrt{2g}LH^{3/2}$
ii)	Triangular	2. $\frac{8}{15}C_d\sqrt{2g}\tan\frac{\theta}{2}H^{5/2}$
iii)	Cipolletti	3. $\frac{2}{3}C_d\sqrt{2g}LH^{3/2}$

The correct match is:

	i	ii	iii
A)	1	2	3
B)	1	3	2
C)	2	1	3
D)	2	3	1

62. Consider the following statements regarding most economic sections for a trapezoidal channel;

1. Sides are at 60° with the horizontal.
2. The wetted perimeter is thrice the bed width.

The correct statement/s is/are:

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

63. A Hydraulic jump is also called as

A) Standing wave.
B) Single wave.
C) Surge.
D) Siphon.

64. Consider the following statements given below :

Statement I : Darcy's Law of Permeability is valid only for laminar flow conditions.
Statement II : Darcy's Law in no way describes the state of flow within individual pores.

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.

65. Consider the following relation between the porosity 'n' and void ratio 'e'.

1. $n=\frac{e}{1-e}$
2. $n=\frac{e}{1+e}$
3. $e=\frac{n}{1-n}$
4. $e=\frac{n}{1+n}$

The correct equations are :

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

66. Match the particle size with their name :

i)	0.075 mm to 4.750 mm	1.	Sand
ii)	0.002 mm to 0.075 mm	2.	Silt
iii)	<0.002 mm	3.	Clay

The correct match is:

	i	ii	iii
A)	1	2	3
B)	1	3	2
C)	2	1	3
D)	2	3	1

67. The volume increase that may occur in soil during shear is called as

A) Dilatency.
B) Pore water pressure.
C) Porosity.
D) Consolidation.

68. Consider the following statements given below :

Statement I : Rankine assumed that the vertical stress on an element of the soil within the inclined backfill and the lateral stress on the vertical plane of the element are conjugate stresses.

Statement II : The lateral stress is always perpendicular to the inclined backfill.

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.

69. Consider the following statements related to assumptions in Terzaghi's Consolidation Theory;

1. The specimen is fully saturated.
2. Water and solid components are incompressible.
3. Darcy's law is strictly applied.

How many statement/s is/are correct?

A) Only one statement.

B) Only two statements.

C) All three statements.

D) No conditions are correct.

70. A sheet pile retaining wall of the waterfront, backed up by ground is

A) Retaining wall.

B) Buttress.

C) Bulkhead.

D) Cofferdam.

71. The gross pressure at the base of the foundation at which the soil fails in shear is

A) Ultimate Bearing Capacity.

B) Net Ultimate Bearing Capacity.

C) Net Safe Bearing Capacity.

D) Gross Safe Bearing Capacity.

72. Consider the following statements given below :

Statement I : The great objection to any of the pile - driving formulae is the uncertainty about the relation between the dynamic and static resistance of the soil.

Statement II : Dynamic formulae do not indicate probable future settlement or temporary changes in soil structure.

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.

73. Classify soil for the following data, based on USCS.

$F_{200} < 5\%$

$R_4 < \frac{1}{2} R_{200}$

$1 \leq C_g \leq 3$

$C_u \geq 6$

A) SW

B) SP

C) GW

D) GC

74. The differential equation for one - dimensional consolidation is

A) $\frac{\partial p}{\partial t} = C_v \frac{\partial^2 p}{\partial z^2}$

B) $\frac{\partial p}{\partial z} = C_v \frac{\partial^2 p}{\partial t^2}$

C) $\frac{\partial p}{\partial z} = C_v \frac{\partial^2 p}{\partial z^2}$

D) $\frac{\partial p}{\partial t} = C_v \frac{\partial^2 p}{\partial t^2}$

75. Consider the following properties ;

1. Sonic Velocity.
2. Point - load index.
3. Porosity.
4. Slaking.

The main index properties of rocks are :

A) 1,2,3 and 4.

B) 2 and 3.

C) 1 and 4.

D) 1, 2 and 3.

76. If the average annual rainfall and evaporation over land masses and oceans of the earth are considered, it would be found that

A) Over the landmass, the annual evaporation is the same as the annual precipitation.
B) About 9% more water evaporates from the oceans than what falls back on them as precipitation.
C) Over the ocean, about 19% more rain falls than what is expected.
D) Over the oceans, about 19% more water evaporates than what falls back on them as precipitation.

77. A hyetograph is a plot between which of the following parameters?

1. Cumulative rainfall
2. Rainfall intensity
3. Time
4. Discharge.

The correct answer is:

A) 2 and 3.
B) 3 and 4.
C) 1 and 3.
D) 1 and 4.

78. The double mass curve technique is adopted to do which of the following?

1. Check the inconsistency of rain gauge records.
2. Find the average rainfall over a number of years.
3. Find the number of rain gauges required.
4. Estimate the missing rainfall data.

The correct answer is:

A) 2 and 3.
B) 1 only.
C) 4 only.
D) 3 and 4.

79. Match the following equation with the respective year

	Equations		**Year**
1.	Horton's equation	i)	1957
2.	Philip's equation	ii)	1911
3.	Kostiakov equation	iii)	1933
4.	Green - Ampt equation	iv)	1932

The correct match is:

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

80. Consider the following statements regarding unit hydrograph;

1. If the precipitation is decidedly non-uniform, unit hydrographs cannot be expected to give good results.
2. Snowmelt runoff cannot be satisfactorily represented by the unit hydrograph.
3. The catchment should not have unusually large storages.

The correct statement/s is/are:

A) 1 and 2 only.

B) 2 and 3 only.

C) 1, 2 and 3.

D) 1 only.

81. Consider the following statements given below :

Statement I : The effect of a flood wave entering a reservoir is studied in reservoir routing.

Statement II : Flood routing is to determine the flood hydrograph at a section of the river by utilizing the data of flood flow at one or more upstream sections.

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.

82. Identify the correct match.

Types of soil		**Formation**
1.	Colluvial soil	Gravity
2.	Alluvial soil	Stream sediments.
3.	Lacustrine soil	Wind
4.	Eolian soil	Quiet waters

How many match/es is/are correct?

A) Only one match.

B) Only two matches.

C) Only three matches.

D) All the four matches.

83. Which of the following is/are functions of irrigation water in crop production?

1. Trigger activity in a seed, setting a chain of biochemical reactions.
2. Promotes chemical action within the plant for its growth.
3. Dissolves mineral nutrients for their rise from the soil to the plant.

The correct answer/s is/are:

A) 1 only.

B) 1 and 2 only.

C) 2 and 3 only.

D) 1, 2 and 3.

84. Consider the following statements :

Assertion (A) : An aqueduct is preferred when the drainage is of large capacity and carries a heavy silt bed load.

Reason (R) : A larger headway is required between the canal bed level and HF level in the drainage.

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.

85. Identify the correct match.

	Name of Spillway	**Other names**
1.	Chute Spillway	Trough Spillway
2.	Emergency Spillway	Auxillary Spillway.
3.	Overflow Spillway	Ogee Spillway
4.	Side channel Spillway	Lateral flow Spillway.

The correct match/s is are:

A) 1 and 4 only.

B) 2 and 3 only.

C) 1,2 and 3 only.

D) 1, 2,3 and 4.

86. Which of the following is/are disadvantage/s of rockfill dam?

1. High maintenance cost.
2. More time is required for construction.
3. Economical in remote locations.

The correct answer/s is/are:

A) 1 only.
B) 1 and 2 only.
C) 1,2 and 3.
D) 3 only.

87. Consider the following statements :

Assertion (A) : The permanent withdrawal of groundwater from storage is known as mining.

Reason (R) : It connotes a depletion of a resource like the exploitation of mineral resources.

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.

88. Which factor plays a critical role in the geometric design of highways, particularly in determining the horizontal alignment and safe design speed?

A) Traffic volume and composition.
B) Terrain and topographical features.
C) Roadside development and land use.
D) Environmental impact assessments.

89. Compare the Statement I and Statement II

Statement I : Geometric design elements in highway engineering are essential for maintaining vehicle stability, reducing accidents, and ensuring efficient traffic flow.

Statement II : Superelevation, also known as banking, is a key geometric design element that helps vehicles negotiate curves safely by counteracting centrifugal forces.

A) Both Statement I and Statement II are true, and Statement II is the correct explanation of Statement I.
B) Both Statement I and Statement II are true, and Statement II is not the correct explanation of Statement I.
C) Statement I is true, but Statement II is false.
D) Statement I is false, but Statement II is true.

90. In traffic engineering, which statement accurately describes the relationship between traffic surveys and traffic planning?

A) Traffic surveys are conducted to assess traffic flow at intersections, while traffic planning focuses on optimizing signal timings.

B) Traffic surveys collect data on traffic volume and speed, providing inputs for traffic planning to optimize road networks and signal timings.

C) Traffic planning involves designing road signs and markings, while traffic surveys analyze vehicle classification and speeds.

D) Traffic surveys assess the effectiveness of traffic signals, while traffic planning determines the placement of roundabouts and rotaries.

91. In road construction, what is the primary purpose of Water - Bound Macadam (WBM) as a base course material?

A) To provide a smooth riding surface for vehicles.

B) To improve load - bearing capacity and distribute traffic loads.

C) To enhance skid resistance and reduce accidents.

D) To minimize environmental impacts and increase sustainability.

92. Match the following pavement distresses with their probable causes :

	Terms		**Definitions**
i)	Rutting	1.	Inadequate compaction.
ii)	Cracking	2.	Insufficient asphalt binder content.
iii)	Bleeding	3.	Excessive traffic loading.
iv)	Ravelling	4.	Poor drainage and moisture intrusion.

The correct match is:

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

93. Amidst the labyrinthine classifications and standards governing road geometrical design, where nuances interwine with regulations, standards and evolving technologies, which assertion resonates with the multifaceted landscape of transportation engineering?

A) Road classification standards are static and unaffected by technological advancements.

B) Geometrical design elements are solely aesthetic considerations in road infrastructure.

C) Evolving technologies have minimal impact on road geometrical design standards.

D) Road geometrical design standards evolve in response to technological advancements and safety imperatives.

94. In traffic engineering, which statement accurately describes the relationship between traffic surveys and traffic planning?

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C) Traffic planning involves designing road signs and markings, while traffic surveys analyze vehicle classifications and speeds.

D) Traffic surveys assess the effectiveness of traffic signals, while traffic planning determines the placement of roundabouts and rotaries.

95. Arrange the following steps in the correct sequence for designing surface and subsurface drainage arrangements in highway engineering :

1. Conduct topographic surveys and identify areas prone to water accumulation.
2. Design and construct culverts or stormwater drains to carry excess water away from the roadway.
3. Implement roadside ditches or swales to collect and channel surface runoff.
4. Install subsurface drains, such as French drains, to alleviate groundwater pressure and prevent waterlogging.
5. Regularly inspect and maintain drainage structures to ensure optimal functionality.

The correct sequence are:

A) 2 - 1 - 4 - 3 - 5

B) 1 - 2 - 3 - 5 - 4

C) 1 - 2 - 4 - 3 - 5

D) 2 - 3 - 4 - 1 - 5

96. Amidst the labyrinth of material standards governing bituminous roads, which specification stands out as a crucial determinant of pavement performance, balancing resistance to deformation and fatigue under varying traffic loads?
A) Optimum asphalt content and gradation of aggregates.
B) Application of tack coat for adhesion between layers.
C) Inclusion of recycled materials for sustainability.
D) Implementation of surface treatments for skid resistance.

97. Which type of rail is commonly used in high - speed railway tracks due to its ability to withstand higher stresses?
A) Bullhead rail.
B) Flat - bottomed rail.
C) Grooved rail.
D) Vignoles rail.

98. In pile foundations for bridges, which factor is crucial in determining the type and length of piles to be used?
A) Aesthetics.
B) Traffic volume.
C) Soil conditions.
D) Bridge classification.

99. Among the myriad surveying methodologies, which time - honoured technique, entwining the tactile feel of chains or tapes for distances and the directional prowess of a compass, remains a cornerstone for surveyors navigating through topographical intricacies?
A) Levelling.
B) Compass surveying.
C) Tachometry.
D) Total Station Surveying.

100. Arrange the following surveying instruments in the order of increasing complexity :
1. Total Station.
2. Theodolite.
3. Chain.
4. Level.

The correct Sequencing is:
A) 3 - 4 - 2 - 1
B) 4 - 3 - 1 - 2
C) 2 - 3 - 1 - 4
D) 3 - 1 - 4 - 2

ROUGH WORK

ROUGH WORK

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

Booklet Serial No. 233269

Test Booklet Series

TEST BOOKLET
NON ENGINEERING WOOD TECHNOLOGY
LECTURER - II
Written Test - 2024
(77)

A

Time Allowed: Two Hours *Maximum Marks: 100*

INSTRUCTIONS

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1. Which of the following precursor of lignin has highest proportion in softwood lignin (called guaiacyl lignin)

   A) Coumaryl alcohol.

   B) Coniferyl alcohol.

   C) Sinapyl alcohol.

   D) None of the above.

2. Which of the following is most appropriate value for Acetyl content of hardwood.

   A) 15-18%

   B) 1-4%

   C) 22-30%

   D) 11-14%

3. Which of the following is a monomer of hemicellulose.

   A) Formaldehyde.

   B) Benzene.

   C) Methyl alcohol.

   D) D-mannose.

4. Brown rot fungus damages.

   A) Cellulose.

   B) Lignin.

   C) Cellulose and hemicellulose.

   D) All of the above.

5. Which is the following being the most appropriate number for degree of polymerisation of hemicelluloses in wood :

   A) 20

   B) 200

   C) 2000

   D) 5000

6. The monomers in celluloses are linked by

A) Ester bonds.

B) Amide bonds.

C) Glycosidic bonds.

D) Ether bonds.

7. Which one of the following is a wood degrading white rot fungus.

A) Coniophora puteana.

B) Polyporus versicolor.

C) Polyporus meliae.

D) None of the above.

8. Which among the following is not correct about acetylation of wood.

A) Esterification reaction.

B) Polymerisation of acetic acid.

C) Hydroxyl groups of wood are converted into acetyl groups.

D) It has acetic acid as by product.

9. Which of the following is the most appropriate number for hydrogen content in elemental composition of dry wood.

A) 12%

B) 6%

C) 20%

D) 44%

10. Which among following is true about Sap - stain fungi :

A) Induces discolouration in wood.

B) Degrades cellulose in wood.

C) Degrades lignin in wood.

D) None of the above.

11. Which of the following is a hardwood Hemicelluloses.

A) Galactoglucomannan.

B) Glucuronoxylan.

C) Arabinoglucuronoxylan.

D) None of the above.

12. Specific gravity of the isolated solid material of the cell walls is approximately.

A) 0.55

B) 1.54

C) 1.07

D) None of the above.

13. As per TAPPI standard, which of the following technique is used to determine acid soluble lignin in wood and pulp.

A) Raman spectroscopy.

B) FTIR spectroscopy.

C) UV visible spectroscopy.

D) Fluorescence spectroscopy.

14. Which among the following is most appropriate value for maximum possible moisture content corresponding to basic specific gravity of 0.30.

A) 200%.

B) 267%.

C) 170%.

D) 79%.

15. Which of the following is most appropriate value for thermal conductivity of wood (please indicate most appropriate value) :

A) 0.14 $Wm^{-1}K^{-1}$.

B) 0.73 $Wm^{-1}K^{-1}$.

C) 7.3 $Wm^{-1}K^{-1}$.

D) 7.3 $KW\ m^{-1}K^{-1}$.

16. Relative electrical conductivity values in the longitudinal, radial, and tangential directions are related by the approximate ratio of

A) 1.0:0.50:0.75

B) 1.0:0.75:0.50

C) 0.55:1.0:0.50

D) 1.0:0.55:0.50

17. Which of the following is false.

A) Thermal conductivity of wood increases with density.

B) Thermal conductivity of wood across the grain is greater than along the grain conductivity.

C) Thermal conductivity of wood increases with extractive content of the wood.

D) Thermal conductivity of wood increases with moisture content.

18. A fully moisture saturated wood sample of 2cm×2cm cross section, 5 cm length and 20g weight has a oven - dry weight of 12 g. The basic density of the wood is.

A) 1 g/cm^3.

B) 0.4 g/cm^3.

C) 0.5 g/cm^3.

D) 0.6 g/cm^3.

19. Arrange following wood species from low specific gravity to high specific gravity.

A) Balsa *(Ochroma pyramidale)*, Rosewood *(Dalbergia latifolia)*, Teak *(Tectona grandis)*.

B) Balsa *(Ochroma pyramidale)*, Teak *(Tectona grandis)*, Rosewood *(Dalbergia latifolia)*.

C) Teak *(Tectona grandis)*, Balsa *(Ochroma pyramidale)*, Rosewood *(Dalbergia latifolia)*.

D) Rosewood *(Dalbergia latifolia)*. Balsa *(Ochroma pyramidale)*, Teak *(Tectona grandis)*.

20. What is unit of thermal diffusivity for wood ?

A) m^2s^{-1}.

B) m^3s^{-1}.

C) $m^2.s$.

D) None of the above.

21. Which of the following is a false statement for speed of sound in wood?

A) Speed of sound varies with grain direction.

B) Speed of sound in wood depends upon modulus of elasticity.

C) Speed of sound in wood depends upon density.

D) Speed of sound does not depend on moisture content.

22. Which one of the following is not the structural elements of softwood ?

A) Tracheid.

B) Vessel.

C) Parenchyma.

D) None of them.

23. Which of the following is true.

A) Hardwoods are produced by Gymnosperms.

B) Balsa wood is an example of softwood.

C) Pine is an example of angiosperms.

D) None of the above.

24. Which of the followings is a ring porous wood.

A) *Shorea robusta.*

B) *Mangifera indica.*

C) *Tectona grandis.*

D) *Albizia lebbeck.*

25. Which among the following is not a Softwood species.

A) *Cedrus deodara.*

B) *Populus angustifolia.*

C) *Picea abies.*

D) *Pinus roxburghii.*

26. Which of the following statement is true.

A) Early wood is formed during spring.

B) Late wood is stronger than early wood.

C) Late wood is darker in colour.

D) All of the above are correct.

27. Which of the following is false (not correct) for wood material ?

A) Lignin provide rigidity.

B) Cellulose provides strength.

C) Extractives significantly contribute to the mechanical strength of wood.

D) Hemicellulose is highly susceptible to biodegradation.

28. Which one of the following is generally not true for Juvenile wood?

A) Juvenile wood has a high microfibril angle.

B) Juvenile wood is produced near the pith of the tree.

C) Longitudinal shrinkage in juvenile wood is more than that of mature wood.

D) Juvenile wood has a higher density than mature wood.

29. Resin canal is absent in which of the following species.

A) Pine.

B) Spruce.

C) Douglas - fir.

D) Rubberwood.

30. Which of the following is responsible for conducting the water from the roots to the leaves.

A) Phloem.

B) Sapwood.

C) Heartwood.

D) Pith.

31. Compression wood in softwood forms on the

A) Lower side of a leaning tree.

B) Upper side of a leaning tree.

C) Uniformly distributed across the stem cross section.

D) None of the above.

32. Which of the following is most appropriate number for tracheids in softwood.

A) 20 to 30% of the cells found in wood.

B) 40 to 50% of the cells found in wood.

C) 60 to 70% of the cells found in wood.

D) More than 80% of the cells found in wood.

33. Bark or lack of wood from any cause on edge or corner of a piece except for eased edges.

A) Boxed heart.

B) Skip.

C) Wane.

D) Collapse.

34. Lignin is found most in wood structure.

A) S_2 layer.

B) Parenchyma.

C) Middle Lamella.

D) S_3 layer.

35. Which of the following is most appropriate value for the ratio of desorption EMC to adsorption EMC.

A) 0.80

B) 1.0

C) 1.25

D) 0.95

36. In case - hardened timber which of the condition prevails?

A) Compressive stress in the surface zone (outer layers) and compressive stress in the inner layers.

B) Tension (Tensile stress) in the outer layers and compressive stresses in the inner layers.

C) Tensile stress in both outer layers and inner layers.

D) Compressive stress in the outer layers and tensile stresses in the inner layers.

37. Which among the following is slowest drying technique.

A) Dehumidification drying.

B) Vacuum drying.

C) Solar drying.

D) Steam heated kiln drying.

38. Which type of shrinkage is least in wood :

A) Longitudinal shrinkage.

B) Tangential shrinkage.

C) Radial shrinkage.

D) Shrinkage is equal in all direction.

39. Which of the following is associated with highest moisture content in wood :

A) Equilibrium moisture content.

B) Fibre saturation point.

C) Oven dried wood.

D) All of the above have same moisture content.

40. End splitting in thick sections of timbers can be minimized by coating the ends of logs with :

A) Thick coal tar.

B) Paraffin wax.

C) Both (A) and (B).

D) Neither (A) nor (B).

41. As per Indian standard, which of the following statements regarding seasoning schedule is correct.

A) Schedule I covers species commonly used for packing case manufacture.

B) Schedule V covers species which include several heavy and highly refractory timbers.

C) Schedule VII covers species used for certain special items, such as bobbins and other turnery articles.

D) All of the above.

42. Which of the following is type of degrades not a consequence of shrinkage anisotropy in wood.

A) Cupping.

B) Diamonding.

C) Warping.

D) Surface checking and end splitting.

43. Dry seasoned wood is attacked by.

A) Flat headed borers.

B) Ambrosia beetles.

C) Powderpost beetles.

D) None of the above.

44. The process of dehumidification drying of timber is based on.

A) Evaporation technology.

B) Condensation technology.

C) Cooling and heating technology.

D) Refrigeration technology.

45. Wood when is dried below Fiber Saturation Point.

A) Becomes dimensionally stable.

B) Becomes dimensionally unstable.

C) Mechanical properties decrease.

D) None of the above.

46. The thickest secondary cell wall layer that makes the greatest contribution to the overall properties of the cell wall.

A) S1 layer.

B) S2 layer.

C) S3 layer.

D) None of the above.

47. Which of the following is a highly Refractory Wood for seasoning purpose.

A) *Shorea robusta.*

B) *Bombax spp.*

C) *Tectona grandis.*

D) *Pinus roxburghii.*

48. Which of the following chemical compositions is used for chemical seasoning of wood.

A) Propylene glycol.

B) Commercial fertilizer grade urea.

C) Phenol formaldehyde.

D) None of the above.

49. The corrugated appearance of timber caused due to excessive but uneven shrinkage during drying.

A) Collapse.

B) Check.

C) Crack.

D) Crook.

50. Which of the followjng is Marine Borer?

A) Shipworms.

B) Limnoria.

C) Sphaeroma.

D) All of the above.

51. Which of the following wood species has highest natural durability

A) *Bombax ceiba.*

B) *Hevea brasiliensis.*

C) *Mangifera indica.*

D) *Daibergia sissoo.*

52. Which of the following is most appropriate number for chromium salt concentration in CCA wood preservative :

A) 37.5%

B) 12.5%

C) 6.3%

D) 47.5%

53. Which of the following is Water - Soluble (Leachable) type of wood preservatives.

A) Zinc chloride.

B) Ammoniacal copper arsenate composition.

C) Copper - chrome boron composition.

D) All of the above.

54. What is the fixating component in CCA wood preservative

A) Arsenic pentoxide.

B) Chromium salt.

C) Copper salt.

D) None of the above.

55. Which of the following is not an organic solvent type wood preservative.

A) Copper Naphthenate.

B) Creosote.

C) Trichlorophenol.

D) Chloropyrifos.

56. Maximum absorption of the preservative is achieved by :

A) Full cell process.

B) Empty cell processes.

C) Diffusion process.

D) Boucherie process.

57. Which of following is a natural (biobased) resin :

A) Diphenylmethane di - isocyanate (MDI).

B) Urea - formaldehyde.

C) Lignin.

D) None of the above.

58. Most effective method for treatment of green round timbers is

A) Diffusion process.

B) Dipping method.

C) Boucherie process.

D) Full cell process.

59. As per Indian standards preservative treatability different timber species is indicated the heartwood of different species is indicated in how many classes (grades).

A) 3

B) 5

C) 4

D) 2

60. Which of the following is true for drying of wood.

A) As wood dries, most of its strength properties decrease.

B) Drying reduces shrinking and swelling of wood.

C) Drying reduces electrical insulation property.

D) All of above.

61. Which of the following range is appropriate value for dielectric constant of oven - dry wood.

A) 0.2 to 0.5

B) 2 to 5.

C) 20 to 50.

D) 200 to 500.

62. Ability of wood to withstand flaws that initiate failure is called.

A) Hardness.

B) Torsion strength.

C) Fracture toughness.

D) None of the above.

63. Swelling in wood due to moisture absorption in cell wall polymer occurs through.

A) Covalent bonding.

B) Hydrogen bonding.

C) Dipole - dipole interactions.

D) None of the above.

64. Which one of the following is true about Glued laminated timber (GLT).

A) GLT is a structural timber product composed of layers of dimensional lumber glued together.

B) GLT can be used in load - bearing structures like bridges.

C) Glulam can be produced in curved shape.

D) All of the above.

65. Maximum load carrying capacity of a member in bending is

A) Modulus of rupture.

B) Modulus of elasticity.

C) Compressive strength.

D) None of above.

66. Time - dependent deformation of wood under load is :

A) Creep.

B) Fatigue.

C) Endurance.

D) Plastic deformation.

67. As per Indian standard, for natural durability, timbers are classified in

A) 2 classes.

B) 3 classes.

C) 4 classes.

D) 5 classes.

68. Which of the following adhesives is most effective for developing plywood for outdoor applications :

A) Urea formaldehyde.

B) Phenol formaldehyde.

C) Melamine formaldehyde.

D) Bio - adhesives.

69. Which among following wood composites has highest modulus of Rupture (MoR).

A) Laminated Veneer Lumber (LVL).

B) Plywood.

C) MDF board.

D) Particle board.

70. Massive curved wooden constructions are made using.

A) Particle board.

B) Cross laminated timber.

C) Glued laminated timber.

D) None of the above.

71. Parts of the tree that lies between the outer bark and heartwood. Arrange from outer to inner part.

A) Sapwood $\rightarrow$ Phloem $\rightarrow$ Cambium.

B) Sapwood $\rightarrow$ Cambium $\rightarrow$ Phloem.

C) Phloem $\rightarrow$ Sapwood $\rightarrow$ Cambium.

D) Phloem $\rightarrow$ Cambium $\rightarrow$ Sapwood.

72. Which among following is a Thermosetting adhesive?

A) Casein adhesive.

B) Melamine formaldehyde.

C) Polyvinyl acetate.

D) None of the above.

73. Which of the following is most appropriate range for the specific gravity of MDF?

A) 0.1 to 0.2.

B) 0.3 to 0.4.

C) 0.4 to 0.5.

D) 0.6 to 0.9.

74. As per IS 710-2010, marine grade plywood needs a minimum preservative (CCA or CCB or ACC) retention of

A) 10 kg/m^3

B) 20 kg/m^3.

C) 15 kg/m^3.

D) 12 kg/m^3.

75. Particle in the form of nearly square or rectangular cross - section are called.

A) Splinter.

B) Flake.

C) Granule.

D) Shaving.

76. Unit of modulus of rupture is

A) N m^2.

B) N/m^2.

C) N/m^3.

D) None of the above.

77. Which of the following wood species is best for making face veneers in plywood manufacturing.

A) *Santalum album* (sandal wood).

B) *Bombax ceiba.* (samul)

C) *Mangifera indica* (Mango).

D) *Dipterocarpus turbinatus* (gurjan).

78. Indian standard (IS) specification for plywood for general purpose.
    A) IS 303.
    B) IS 3030.
    C) IS 401.
    D) IS 1734.

79. Figure produced by irregular wavy grain is called.
    A) Swirl.
    B) Bear Scratch.
    C) Stripe.
    D) Mottle.

80. Irregular grain usually surrounding knots and crotches is termed as
    A) Spiral Grain.
    B) Swirl Grain.
    C) Torn Grain.
    D) Diagonal Grain.

81. A joint made between two pieces of timber or veneers in the general direction of the grain.
    A) Edge joint.
    B) End joint.
    C) Lap joint.
    D) Tongue and Groove joint.

82. Texture which indicates large size or wide distribution or both of wood elements is called.
    A) Uneven Texture.
    B) Fine Texture.
    C) Coarse Texture.
    D) None of the above.

83. Space in a saw blade between successive teeth to carry the saw dust :
    A) Kerf.
    B) Gullet.
    C) Bevel.
    D) None of the above.

84. Width of cut made by a saw is called as.

A) Pitch.

B) Kerf.

C) Gauge.

D) Face.

85. Which is a correct statement for Plain Sawn Lumber.

A) Less risk of checking during drying than Quarter sawn.

B) More dimensionally stable than Quarter sawn.

C) Coatings will last longer than Quarter sawn.

D) None of the above.

86. A joint in which the reduced end (tenon) of one member fits into the corresponding slot (mortise) of the other.

A) Butt joint.

B) Mortise and Tenon joint.

C) Finger joint.

D) None of the above.

87. Resistance to failure under specific combinations of cyclic loading conditions.

A) Torsion strength.

B) Fatigue.

C) Toughness.

D) None of the above.

88. Axial parenchyma associated with the vessels or vascular tracheids.

A) Diffuse parenchyma.

B) Banded parenchyma.

C) Paranormal parenchyma.

D) Paratracheal parenchyma.

89. Which of the following statements is true.

A) Stress grading refers to the principle by which the material is graded by consideration of maximum principal stresses to which it can be subjected.

B) Structural grading' refers to the principle by which the material is graded on the basis of visible defects which have known effects on the strength properties of the material.

C) Both (A) and (B) are true.

D) None of the above.

90. In planning operation, slight depressions occurring below the line of cut and remaining is rough in unplanned condition is called.

A) Snout.

B) Skip.

C) Slab.

D) None of the above.

91. Which of the following chemicals is used to estimate holocellulose content in wood.

A) Sulphuric acid.

B) Sodium chlorite.

C) Phenol.

D) None of the above.

92. The photodegradation of wood and wood/polymer composites can be controlled by using.

A) Ultraviolet Absorbers.

B) Inorganic pigments like titanium dioxide.

C) Hindered amine light stabilizers (HALS).

D) All of the above.

93. Cause of transparent wood coating failure in outdoor use.

A) Moisture absorption.

B) UV degradation of wood.

C) Both A and B.

D) None of the above.

94. Which of following is not a penetration type of wood finish.

A) Linseed oil.

B) Tung oil.

C) Enamel paint.

D) Danish oil.

95. Which of the following is an effect of degradation of wood by UV light irradiation.

A) Discoloration.

B) Coating failure.

C) Lignin degradation.

D) All of the above.

96. Moisture - Exclusion Effectiveness of modified wood is calculated by measuring.

A) Equilibrium moisture contents of unmodified and modified wood.

B) Water soaking by coated and uncoated wood.

C) Swelling of uncoated and coated wood.

D) None of the above.

97. Best technique to determine cellulose crystallinity is :

A) NMR spectroscopy.

B) X-ray diffraction technique.

C) IR spectroscopy.

D) None of the above.

98. Solvent which can dissolve cellulose is

A) Acetone.

B) Ethanol.

C) Cadmium triethylenediamine (cadoxen).

D) None of the above.

99. Which is not a natural defect in wood?

A) Knot.

B) Reaction wood.

C) Shake.

D) Checks.

100. Which of the following is true?

A) Shear strength parallel to grain is the ability to resist internal slipping of one part upon another along the grain.

B) Tensile strength perpendicular to grain is resistance of wood to forces acting across the grain that tend to split a member.

C) Both A and B are correct.

D) Neither A nor B are correct.

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Booklet Serial No. 233441

Test Booklet Series

TEST BOOKLET
NON ENGINEERING FOOD TECHNOLOGY
LECTURER - II
Written Test - 2024
(79)

A

Time Allowed: Two Hours *Maximum Marks: 100*

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1. The major characteristics that govern the quality of stored foods include.

   1. Temperature.
   2. Food Category.
   3. Moisture.
   4. Size of food.

   The correct answer/s is/are:

   A) 3 only.

   B) 2 and 3 only.

   C) 1 and 2 only.

   D) 1, 2 and 3.

2. The toxic substances specified in the Name of the substance of the table below, which may occur naturally in any article of food, shall not exceed the limit specified in the corresponding entry in the maximum limit of the said Table :-

	Name of Substance	**Maximum Limit**
1.	Hydrocyanic acid	1 ppm
2.	Agaric acid	100 ppm
3.	Hypericine	10 ppm

   The correct answer/s is/are:

   A) 2 only.

   B) 2 and 3 only.

   C) 1 and 2 only.

   D) 1, 2 and 3.

3. The microorganisms that metabolize glucose to produce lactic acid and the amino acids leucine and valine to isovaleric and isobutyric acids include :

   1. *Lactobacillus curvatus.*
   2. *Shewanella putrefacience.*
   3. *Brochothrix thermosphacta.*
   4. *Lab.Sake.*

   The correct answer is:

   A) Only 2.

   B) Both 2 and 4.

   C) Both 1 and 4.

   D) Only 4.

4. Food Safety and Standards (Fortification of Food) Regulation was into force from ____.
   A) 2007
   B) 2013
   C) 2018
   D) 2020

5. Which of the following is/are considered as benefits of ISO 22000?
   1. Continually improve and update your systems so they stay effective.
   2. ISO 22000 contains the food safety management system requirements of FSSC 22000 (which is a Global Food Safety Initiative, GFSI recognised scheme) and is used along with requirements for prerequisite programs for the appropriate industry sector.
   3. Getting access and managing the key standards you need is important to avoid costly errors and work with confidence.

   The correct answer/s is/are:
   A) 3 only.
   B) 2 and 3 only.
   C) 1 and 2 only.
   D) 1, 2 and 3.

6. Match the Packaging type and its consideration :

	Packaging type		**Consideration**
i)	Gas - flushed containers	1.	Is it possible for other materials, e.g. moisture, to pass through the product and cause contamination.
ii)	Vacuum packaging	2.	Intended to extend the life of a product by preventing the growth of spoilage organisms may need to use vacuum packaging in conjunction with additional control measures such as chilling.
iii)	Gas - permeable packaging.	3.	Intended to extend the life of a product by preventing the growth of spoilage organisms, Need to ensure that any pathogens present, e.g. anaerobic spore formers, cannot grow in the chosen gas mix.

   The correct match is:

	i	ii	iii
A)	1	2	3
B)	1	3	2
C)	3	2	1
D)	2	3	1

7. Consider the following statements :

Assertion (A) : Cheddar cheese powder retains its flavour due to spray drying.

Reason (R) : Reconstituted cheddar cheese powder is milder in flavour

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.

8. _____ is the biological hazard in coconut that is to be used as a topping ingredient.

A) Staphylococcus aureas.

B) Shigella Spp.

C) Cryptosporidium parvum.

D) Salmonella spp.

9. Consider the following statements related to HACCP and choose the incorrect statements:

1. The decision tree is used before the hazard analysis.
2. The decision tree then is used at the steps where a hazard that must be addressed in the HACCP plan has been identified.
3. Only one hazard may be controlled by a specific control measure.

The incorrect statement/s is/are:

A) Only one statement.

B) Only two statements.

C) All three statements.

D) None of the statements are incorrect.

10. Consider the following statements given below :

Statement I : Freezing may preserve foods for a long period.

Statement II : Salad vegetables which are eaten raw are frozen as they retain their crisp texture in the process of blanching and freezing.

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.

11. Consider the following statements:

Assertion (A) : Bacteria that are encapsulated are more resistant to heat and chemicals.

Reason (R) : Capsule doesn't serve as a source of reserved nutrients.

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.

12. Match the defects in ice cream and its causes :

Defects in Ice Cream	**Causes**
i) Cooked	1. Excessive Overrun
ii) Buttery	2. Overheating of the mix during pasteurization.
iii) Fluffy	3. Inadequate Homogenization.

The correct match is:

	i	ii	iii
A)	1	2	3
B)	1	3	2
C)	3	2	1
D)	2	3	1

13. Which of the following is correct?

1. Lycopene protects human cells from nitrogen dioxide.
2. Flavonoids in turmeric lower the risk of heart disease.
3. Raw Onion replaces HDL.

The correct answer/s is/are:

A) 1 only.

B) 2 and 3 only.

C) 1 and 2 only.

D) 1 and 3.

14. Consider the following statements related to sacks used for storing foods and choose the correct ones :

1. They are not waterproof and chemically resistant.
2. Sacks are made from 0.03-0.15 mm HDPE.
3. Sacks made of HDPE have a high tear strength, tensile strength.

The correct statement/s is/are:

A) Only one statement.
B) Only two statements.
C) All three statements.
D) None correct.

15. Fat in churn is 1050 Kg, and butter contains 2% salt. How much salt should be added to the churn (without loss of salt during working)?

A) 18.75 Kg.
B) 20.15 Kg.
C) 23.16 Kg.
D) 26.25 Kg.

16. Consider the following statements related to radiation;

1. Low levels of radiation result in pasteurization.
2. Low - level radiation is required to inactivate enzymes.

The correct statement/s is/are:

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

17. Consider the following statements :

Assertion (A) : Every package of food containing prebiotics shall carry the following information on the label containing the words PREBIOTIC FOOD, name of prebiotic, suggested or recommended serving size which shall deliver the effective dose of prebiotic related to the health claim, an advisory warning 'NOT FOR MEDICINAL USE' prominently written, a warning or any other precautions to be taken while consuming, known side effects, if any, contraindications, and product - drug interactions, as applicable.

Reason (R) : The food business operator shall use additives in prebiotic preparations.

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. Food is milled from 6 mm to 0.0012 mm using a 10 hp motor. Would this motor be adequate to reduce the size of the particles to 0.0008 mm? Assume Rittinger's equation and that 1 hp = 745.7 W.

A) 8 hp.
B) 10.7 hp.
C) 15 hp.
D) 16.8 hp.

19. Consider the following statements affecting fat loss in skim milk;

1. Degree and temperature of agitation given to milk before separation.
2. Type of milk.

The correct statement/s is/are:

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

20. Consider the following statements :

Assertion (A) : The interaction of water activity with temperature, pH, oxygen, carbon dioxide, or chemical preservatives has an important effect on the inhibition of microbial growth.

Reason (R) : When any one of the other environmental conditions is sub-optimal for a given micro - organism, the effect of reduced a_w is reduced.

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.

21. Match the legumes and their biological value :

	Legume	**Biological value**
i)	*Soyabean*	1. 65
ii)	*Chickpea*	2. 70.4
iii)	*Green Gram*	3. 79.5

The correct match is:

	i	ii	iii
A)	1	2	3
B)	1	3	2
C)	3	2	1
D)	3	1	2

22. Consider the following statements related to water activity ;

1. Enzymic activity virtually increases at a_w values below the BET monolayer value.
2. Due to low substrate mobility and its inability to diffuse to the reactive site on the enzyme, its activity stops.

The correct statement/s is/are:

A) 1 only.

B) 2 only.

C) Both.

D) Neither.

23. _____ is the meat from cattle slaughtered 2-4 weeks after birth

A) Calves.

B) Beef.

C) Lamb.

D) Veal.

24. Match the type of disease and microbial group :

	Type of Disease	**Microbial Group**
i)	*Camphylobacter*	1. Gram Negative
ii)	*Listeriosis*	2. Gram Positive
iii)	*Brucellosis*	3. Gram Negative.

The correct match is:

	i	ii	iii
A)	1	2	3
B)	1	3	2
C)	3	2	1
D)	3	1	2

25. Seed coats of pulses contain about _____ polyphenols, dehusking removes the anti-nutritional factors.

A) 50-64%

B) 67-73%

C) 80-90%

D) 91-93%

26. Uncreamed cottage cheese may be preserved for ____ by freezing or by brine storage.

A) 48 days.

B) 60 days.

C) 81 days.

D) 90 days.

27. Consider the following statements :

Assertion (A) : The addition of sugar to the egg mixture, decreases the temperature at which coagulation takes place.

Reason (R) : The addition of sugar to egg, also increases the heat stability of proteins.

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.

28. Consider the following statements :

Assertion (A) : Unconventional flours from fruits, legumes, and tubers are used in bakery products.

Reason (R) : The combination of wheat or maize flours with ingredients rich in dietary fiber, such as unripe fruit and legume flours will increase starch digestibility.

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.

29. The specific gravity of milk is measured using _____

A) Hydrometer.

B) Refractometer.

C) Lactometer.

D) Butyrometer.

30. Consider the following statements :

Assertion (A) : Controlled atmosphere storage can be viewed in two phases - the "purge phase" and the "maintenance phase".

Reason (R) : Solid Carbon dioxide is then passed through the system.

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.

31. Match the defects in whole milk powder and prevention methods:

	Type of Disease		**Microbial Group**
i)	Tallowy	1.	Storage at 24°C.
ii)	Rancid	2.	Optimum pre - heating temperature.
iii)	Stale	3.	Short Storage.

The correct match is:

	i	ii	iii
A)	1	2	3
B)	1	3	2
C)	3	2	1
D)	3	1	2

32. The protein content in compressed yeast used for baking is

A) 62-67%

B) 52-56%

C) 42-56%

D) 32-39%

33. A bowl centrifuge is used to break an oil - in - water emulsion. Determine the radius of the neutral zone in order to position the feed pipe correctly. (Assume that the density of the continuous phase is 1000 kg m^{-3} and the density of the oil is 870 kg m^{-3}. The outlet radii from the centrifuge are 3 cm and 4.5 cm).

A) 0.83 cm.

B) 0.91 cm.

C) 0.097 m

D) 0.097 cm

34. Consider the following statements :

Assertion (A) : Illness occurs by ingesting a large number of viable cells of some pathogenic bacteria through contaminated food and water.

Reason (R) : This is because of the predisposing factors associated with a particular outbreak.

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.

35. The _____ has a perforated metal basket lined with a filtering medium, which rotates at up to 2000 rev min^{-1} in automatically controlled cycles which last 5-30 min, depending on the feed material.

A) Disc Centrifuge.

B) Basket Centrifuge.

C) Liquid Centrifuge.

D) Centrifugal Clarifier.

36. Consider the following statements regarding hot water blanching of fruits;

1. Based on the size of the fruits, hot water blanching is usually done at a temperature of 120°C for a period of 70 minutes.
2. It also depends on the nutrient content of the fruit.

The correct statement/s is/are:

A) 1 only.

B) 2 only.

C) Both.

D) Neither.

37. Consider the following statements :

Assertion (A) : The efficiency of separation of dried milk powders with a cyclone unit depends on the size of the particle to be removed.

Reason (R) : As the size of the particle decreases, the efficiency of the cyclone increases.

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.

38. ____ is the property of Polycarbonates.

A) Low softening point temperature.

B) Clarity and transparency.

C) Soft.

D) Single usage.

39. Milk treated with Ultra high temperature has a shelf life of ____ at 20°C.

A) 3 weeks.

B) 3 months.

C) 2 years.

D) 2 weeks.

40. Consider the following statements :

Assertion (A) : Enzymes are protein - based molecules heat sensitive and active at certain pH values.

Reason (R) : If the temperature and pH conditions are not optimal, pectin decomposition requires a longer time or higher enzyme concentration.

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.

41. Consider the following statements regarding blanching :

1. Carrots are blanched at 50°C for 10 min.
2. The enzyme peroxidase in carrots is destroyed by blanching.

The correct statement/s is/are:

A) 1 only.

B) 2 only.

C) Both.

D) Neither.

42. The enzymatic reaction leading to the conversion of starch to sugar during spouting of grains is _____.

A) Maltose.

B) Fructose.

C) Glucose.

D) Sucrose.

43. The ball mill used for reducing the size of foods has a diameter of :

A) 2.5-15 cm.

B) 7.5-25 cm.

C) 5-30 cm.

D) 5-35 cm.

44. Consider the following statements regarding water balance;

1. Buffalo milk is preferred for channa production.
2. The channa from Buffalo milk has a slightly hard body, a greasy and coarse texture.

The correct statement/s is/are:

A) 1 only.

B) 2 only.

C) Both.

D) Neither.

45. Match the food - borne diseases caused by some pathogenic organisms:

	Pathogenic Organisms	**Effects and Diseases**
i)	*Steptococcus pyrogenes*	1. Colic muscular pains.
ii)	*Penicillium islandicum*	2. Liver damage
iii)	*Trichinella spiralis*	3. Scarlet fever

The correct match is:

	i	ii	iii
A)	1	2	3
B)	1	3	2
C)	3	2	1
D)	3	1	2

46. Consider the following statements :

Statement I : Nisin is effective against *Listeria monocytogenes*.

Statement II : Its production by *Lactococcus lactis* is an expensive method of removing this potentially dangerous food - poisoning micro - organism from cheese.

The correct statement/s is/are:

A) 1 only.

B) 2 only.

C) Both.

D) Neither.

47. The optimum temperature - time relationship of processing is _____ for 2-5 minutes.

A) 59°C.

B) 60°C.

C) 65°C.

D) 72°C.

48. Consider the following statements regarding the Controlled atmosphere system :

1. Depletion of oxygen to asphyxiate organisms.
2. Nitrogen supply.
3. The addition of carbon dioxide acts directly and kills them.

The correct statement/s is/are:

A) 1 and 3.

B) 2 and 3.

C) 1 and 2.

D) 1, 2 and 3.

49. Keto acid, hydroxy acid, and amine are produced due to the action of ____ and ____ during the interaction between microorganisms and amino acids.

1. Nitrification.
2. Deamination.
3. Putrefaction.
4. Decarboxylation.

The correct answer is:

A) 1 and 2

B) 2 and 4

C) 1 and 4

D) 3 and 4

50. _____ is made using high - protein wheat.

A) Cakes.

B) Cookies.

C) Bread.

D) Pastry.

51. Identify the correct match.

	Type of laminate	**Food Application**
1.	Cellulose - polyethylene - Cellulose	Cheese, Coffee.
2.	Polyethylene - aluminium - paper	Sugar
3.	Polyvinylidene chloride	Ice cream.
4.	Polyethylene - Nylon	Meat.

How many match/es is/are correct?

A) Only one match.

B) Only two matches.

C) Only three matches.

D) All the four matches.

52. Consider the following statements :

Assertion (A) : *Bifidobacterium* species metabolize hexoses to produce lactate and acetate by the fructose - phosphate shunt or *bifidus* pathway.

Reason (R) : Two molecules of lactate and three molecules of acetate are produced for every two molecules of hexoses, without the generation of any CO_2.

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.

53. Minimum water activity for the growth of *Clostridium botulinum* is _____.

A) 0.7

B) 0.82

C) 0.78

D) 0.97

54. Match the Toxic effect of metals and chemicals :

	Metal		Toxic Effects
i)	Cobalt	1.	Cardiac Failure.
ii)	Cadmium	2.	Kidney Damage
iii)	Mercury	3.	Brain Damage

The correct match is:

	i	ii	iii
A)	1	2	3
B)	1	3	2
C)	3	2	1
D)	3	1	2

55. Consider the following statements:

Assertion (A) : The textural differences between hard and soft wheat are determined by the presence of specific Low Molecular Weight (LMW) proteins.

Reason (R) : The presence of low molecular weight proteins, in soft varieties, promotes a strong adhesion between the starch granules and the protein matrix.

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.

56. The _____ of the dough is due to the presence of polymeric glutenins.

A) Extensibility.

B) Plasticity.

C) Elasticity.

D) Expansibility.

57. Consider the following statements:

Assertion (A) : In the growth curve of bacteria, the generation time extends as conditions become less favourable and decrease as they become more favorable.

Reason (R) : The changes in the surrounding atmosphere will extend the generation time of microorganisms.

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.

58. The texture of condensed milk depends on _____.

A) Casein.

B) Sucrose.

C) Solid - not - fat.

D) Lactose.

59. Consider the following statements:

Assertion (A) : Iron is a desirable element in food processing.

Reason (R) : Iron catalyzes the oxidation of fat or oil, increases the turbidity of wine and, as a constituent of drinking water, supports the growth of Iron - requiring bacteria.

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. _____ is an example of extra - long polyunsaturated fatty acid.

A) Caproic Acid.

B) Clupanodonic Acid.

C) Oleic Acid.

D) Stearic Acid.

61. A dose of _____ is needed for a 12D reduction of *Cl.botulinum*.

A) 22 Gy.

B) 45 Gy.

C) 48 KGy.

D) 32 KGy.

62. Consider the following statements :

Assertion (A) : In biscuits and cookies, sucrose aids creaming.

Reason (R) : The sugar crystallizes, and the released water evaporates resulting in crispness and surface cracking.

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.

63. Theaflavins and Thearubigins formed in the ratio of____ during the fermentation process indicates its correct quality assessment.

A) 1:4 and 1:6

B) 1:10 or 1:12

C) 1:6 and 1:8

D) 1:8 and 1:10

64. Identify the correct match.

	Enzyme	**Function**
1.	Catalase	Brewing
2.	Cellulase	Production of Dextrin.
3.	Alpha Amylase	Removal of H_2O_2 from Liquid Egg.

The correct match/s is are:

A) 3 only.

B) 1 and 2.

C) 1 and 3.

D) 1, 2 and 3.

65. Consider the following statements :

Assertion (A) : For the dough to rise, the disulfide bonds must be strong.

Reason (R) : The mechanical energy imparted to the dough during mixing development breaks these bonds by reduction and results in the uncoiling of the gluten molecule.

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.

66. Calculate the amount of oxygen that enters through a polyethylene packaging material in 24 h if the pack has a surface area of 750 cm^2 and an oxygen permeability of 120 ml m^{-2} per 24 h at 23°C and 85% relative humidity.

A) 0.00325 kmole.

B) 0.00196 kmole.

C) 0.00398 kmole.

D) 0.00396 kmole.

67. Due to the large surface area of the droplets in rapid drying, the time taken to dry is _____.

A) 2 s

B) 5-12 s.

C) 1-10 s.

D) 2-20 s.

68. Consider the following statements given below :

Statement I : To stimulate the growth of *Bifidobacterium* in the colon by supplying one or more selective Nitrogen and energy sources that are not metabolized by the bacteria in the small intestine as well as by many bacteria found in the colon.

Statement II : This gives *Bifidobacterium* a selective growth advantage and allows it to reach high numbers.

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.

69. Milk containing 3.7% fat and 12.8% total solids is to be evaporated to produce a product containing 7.9% fat. What is the yield of product from 100 kg of milk and what is the total solids concentration in the final product, assuming that there are no losses during the process?

A) 22%

B) 23%

C) 25.2%

D) 27.3%

70. Milk pigment is _____ and _____.

1. Anthoxanthin.
2. Carotene.
3. Anthocyanin.
4. Xanthophyll.

The correct answer is:

A) 1 and 3.

B) 1 and 4.

C) 2 and 3.

D) 2 and 4.

71. Consider the following statements :

Statement I : Drum driers have high drying rates and high energy efficiencies.

Statement II : Drum driers are not suitable for slurries.

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.

72. Consider the following statements:

Assertion (A) : Encapsulation of bacteria increases the resistance to heat and chemicals.

Reason (R) : Capsule doesn't serve as a source of reserved nutrients.

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.

73. On processing and storage, the loss of Biotin in foods ____.

A) 5-10%

B) 10-15%

C) 15-20%

D) 15-25%

74. Consider the following statements:

Assertion (A) : Clumping is the tendency of fat globules to loosely adhere to one another.

Reason (R) : The degree of clumping depends on the whipping of milk.

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. Peas which have an average diameter of 6 mm and a density of 880 kg m^{-3} are dried in a fluidised - bed drier. The minimum voltage is 0.4 and the cross - sectional area of the bed is 0.25m^2. Calculate the minimum air velocity needed to fluidise the bed if the air density is 0.96kg m^{-3} and the air viscosity is 2.15×10^{-5} Nsm^{-2}.

A) 7.37ms^{-1}.

B) 7.78ms^{-1}.

C) 8.5 ms^{-1}.

D) 9.67 ms^{-1}.

76. _____ fish has <1% fat.

A) Hake.

B) Cod.

C) Hadlock.

D) Herring.

77. Consider the following statements given below :

Statement I : The effect of pressure on preformed mycotoxins is not limited.

Statement II : Patulin, a mycotoxin produced by several species of *Aspergillus, Penicillium* and *Byssochlamys*, could not be degraded by pressure.

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.

78. Consider the following statements given below :

Statement I : Dry sodium caseinate should normally be yellowish white for buffalo milk and chalky white for cow milk.

Statement II : Dry Sodium caseinate is used as a coffee whitener

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.

79. *Ped. pentosaceus* increases the acidity to 1.8% in the production of _____.

1. Sauerkraut.
2. Kimchi.
3. Kefir.

How many answers are correct?

A) Only one.

B) Only two.

C) All three.

D) None correct.

80. Potato crisps having 300 g of dry solids are to be packaged in a 0.2m 2 sealed bag made from barrier film having a water vapour transmission rate of 0.009 mL $day^{-1}m^2$. From studies of the sorption isotherm of the crisps, the equilibrium moisture content = 0.05g per g of solids, the initial moisture content = 0.015 g per g of solids, the critical moisture content = 0.04 g per g of solids and the slope of the moisture sorption isotherm = 0.04 g H_2O/g solids per units a_w. The crisps are expected to be stored at 20°C and the vapour pressure of pure water at the storage temperature = 17.53 Torr. Calculate the expected shelf life using this film, i.e. when the moisture content reaches the critical moisture content.

A) 12 months.

B) 16 months.

C) 20 months.

D) 23 months.

81. Consider the following statements :

Assertion (A) : Rapid freezing of poultry produces light - appearing birds within the fiber.

Reason (R) : Fine ice crystals within poultry make the fiber appear darker.

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.

82. Consider the following statements:

Statement I : The main nutritional changes during baking occur up to the centre portion of foods.

Statement II : The ratio of surface area to volume is an important factor in determining the effect on overall nutritional loss.

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.

83. The thickness of the flexible packaging material is _____.

A) less than 0.25 mm thick.

B) equal to 0.25 mm thick.

C) less than 0.16 mm thick.

D) more than 0.25 mm thick.

84. The amount of ascorbic acid in Indian Gooseberry per 100 g of the fruit is _____.

A) 300 mg.

B) 400 mg.

C) 600 mg.

D) 850 mg.

85. The concentration of Sodium benzoate used as an antimicrobial in carbonated and still beverages is _____.

A) 0.03-0.05%

B) 0.02-0.04%

C) 0.02-0.03%

D) 0.01-0.03%

86. Consider the following statements :

Assertion (A) : Good loaf volume and crumb quality in the baked product can be achieved with the help of oxidising agents.

Reason (R) : Hydrogen peroxide produced by the action of the enzyme Glucose Oxidase improves the dough property.

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.

87. Consider the following statements regarding food spoilage :

1. Most foods have some amounts of high - molecular - weight compounds.
2. Many spoilage microorganisms like bacteria, are able to utilize them and cause detectable food spoilage.

The correct statement/s is/are:

A) 1 only.

B) 2 only.

C) Both.

D) Neither.

88. Consider the statements:

Statement I : Ultrasonic homogenisers use high - frequency sound waves (18-30 kHz) to cause alternate cycles of compression and tension in low - viscosity liquids and cavitation of air bubbles.

Statement II : In the Ultrasonic homogenizer, the droplet sizes are 2-3 microns.

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.

89. In an analysis of ground salt using Tyler sieves, it was found that 38% of the total salt passed through a 7 mesh sieve and was caught on a 9 mesh sieve. For one of the finer fractions, 5% passed an 80 mesh sieve but was retained on a 115 mesh sieve. Estimate the surface areas of these two fractions in a 5 kg sample of the salt, if the density of salt is 1050 kg m^{-3} and the shape factor (1) is 1.75.

A) 12.3 m^2

B) 13 m^2

C) 14.7 m^2

D) 16.6 m^2

90. Identify the correct match.

	Packaging type	**Consideration**
1.	Atacama Desert	Gold
2.	Great Australian Desert	Sodium Nitrate.
3.	Kalahari Desert	Diamonds.

The correct match/s is are:

A) 3 only.

B) 1 and 2.

C) 1 and 3.

D) 1, 2 and 3.

91. The third filament and backbone of the sarcomere, which connects the filaments with the Z line and forms an "elastic" is ____.

A) Actin.

B) Myosin.

C) Actin and Myosin.

D) Titin.

92. Consider the following statements given below :

Statement I : In sensory evaluation, testing should be done at a time when the panel members are fresh.

Statement II : The sensory evaluation testing time is generally between 5-6 am.

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.

93. The amount of energy that is needed to fracture a food is determined by its _____ and tendency to crack.

A) Crunchiness.

B) Crispiness.

C) Hardness.

D) Durability.

94. Consider the following statements :

Assertion (A) : The safety criteria used for UHT processing should be based upon those well- established for canned and bottled products.

Reason (R) : Colour changes, hydroxymethyl furfural formation, thiamine loss, whey protein denaturation and lactulose formation will all be higher for in-container sterilisation compared to UHT processing.

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.

95. A nonessential amino acid although it does act as a precursor of many compounds formed by various biosynthetic mechanisms is _____.

A) Valine.

B) Hystidine.

C) Gycine.

D) Methionine.

96. Consider the following statements given below :

Statement I : In sensory evaluation trained panel should be 10-22 members.

Statement II : Semi trained panel should be 25-30 members.

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.

97. Consider the following statements :

Assertion (A) : Physical and Biochemical Factors in the Muscle of meat, affect its Water - Holding Capacity.

Reason (R) : Positive and negative groups within the protein are attracted to each other and result in an enhancement in the amount of water that can be attracted and held by that protein.

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.

98. ____ is the dosage of radiation Applied to prevent injury to the fruit, leading to discolouration or textural damage.

A) 1 KGy.

B) 2 KGy.

C) 2.5 KGy.

D) 3.1 KGy.

99. Identify the correct match.

	Food	**Radiation Dosage**
1.	Cocoa beans	7-10 KGy
2.	Inhibition of spouts	0.1-0.2 KGy.
3.	Spices	5 Gy

The correct match/s is are:

A) 2 only.

B) 1 and 2.

C) 1 and 3.

D) 1, 2 and 3.

100. Consider the following statements regarding Electron Spin Resonance (ESR):

1. ESR measures the absorption of electromagnetic radiation by electrons in a magnetic field.
2. ESR is specifically used for studying the magnetic properties of nuclei.
3. ESR requires the presence of a static magnetic field.
4. ESR applies only to molecules with unpaired electrons.

The correct statements are :

A) 1 and 3.

B) 2 and 3.

C) 1 and 4.

D) 2 and 4.

ROUGH WORK

ROUGH WORK

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

Booklet Serial No. **233461**

Test Booklet Series

A

TEST BOOKLET
NON ENGINEERING GARMENT TECHNOLOGY
LECTURER - II
Written Test - 2024
(80)

Time Allowed: Two Hours *Maximum Marks: 100*

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 **100** 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

1. Which amino acids primarily compose the structure of silk?

   A) Glycine and Serine.

   B) Glycine, Serine, and Alanine.

   C) Glycine, Serine, Alanine, and Glycylalanine.

   D) Serine and Alanine.

2. Which of the following statements regarding fine denier per filament yarn compared to normal denier per filament (dpf) yarn is FALSE in terms of its mechanical properties?

   A) The tenacity value of fine dpf POY spun is higher than that of normal dpf POY.

   B) The elongation - at - break value of fine dpf POY spun is lower than that of normal dpf POY.

   C) The Uster value of fine dpf yarn is slightly higher than that of normal dpf yarn.

   D) The draw force value of fine dpf yarn is higher than that of normal dpf yarn.

3. What is the primary process involved in the production of viscose rayon?

   A) Fermentation of wood pulp.

   B) Conversion of cellulose into xanthate.

   C) Dissolution of cellulose in concentrated caustic soda.

   D) Extraction of cellulose from bamboo.

4. Which of the following solvents is **NOT** effective in dissolving nylon?

   A) Cresol.

   B) Acetone.

   C) Formic acid.

   D) Phenol.

5. Which of the following statements is true regarding the production of yarns based on the provided content?

A) Continuous filaments cannot be cut into discrete lengths.

B) Manufactured fibers cannot be twisted with natural fibers to form staple - spun yarns.

C) Plain yarns are of less technological importance compared to other types of yarns.

D) The content primarily focuses on the production of fancy yarns.

6. Match the following traveler characteristics with their corresponding effects :

i) Flat cross - section	1. Reduces tendency to tilt
ii) Half - round cross - section	2. Shaves off projecting hairs.
iii) Elliptical shape	3. Frequently used with elliptical travelers.

The correct match is:

	i	ii	iii
A)	1	2	3
B)	1	3	2
C)	2	1	3
D)	2	3	1

7. Which of the following is/are considered as key factors and methods involved in the process of making ply yarns using two - for - one twisters?

1. The use of precision wound packages to conserve space and increase package density.
2. The utilization of magnets to hold yarn packages in place inside the balloon of the twister.
3. Control of yarn tension using various spring - loaded and ball - type devices mounted in the central hollow shaft of the winder.
4. Application of waxing to limit the increase in hairiness and wild fibers, thereby reducing fly and dust generation.

The correct answer/s is/are:

A) 3 and 4 only.

B) 2 and 3 only.

C) 1 and 2 only.

D) 1,2 and 3.

8. Which of the following statements is/are correct based on the limitation of linear speed with non - rotating steel rings and steel travelers?

A) It is approximately 100 ft/sec (30m/sec).

B) It exceeds 100 ft/sec (30 m/sec).

C) It is inversely proportional to the weight of the steel rings.

D) It is dependent on the temperature of the environment.

9. Which of the following statements is true regarding warp patterning mechanisms?

A) The tappet loom is the most complex among shuttle looms.

B) The dobby loom is suitable for weaving up to 8 heald shafts.

C) The jacquard mechanism can control individual warp ends, allowing for elaborate designs.

D) The tappet loom is suitable for figuring up to 40 heald shafts.

10. Which fabric defect can be identified by irregular spacing between groups of warp yarns across the width of the fabric?

A) Twisting.

B) Skewing.

C) Reediness.

D) Pilling.

11. Which of the following statements describes the function of the feeler mechanism in a loom?

A) To detect the warp threads and adjust the tension accordingly.

B) To sense the shuttle movement and regulate its speed.

C) To monitor the fabric tension and prevent overstretching.

D) To detect the weft on the pirn and trigger pirn changing when necessary.

12. Which term refers to the interlacing pattern of the warp and weft in weaving?

A) Stitch.

B) Knit.

C) Weave.

D) Braid.

13. Which of the following statements is **TRUE** based on the purpose of using multiple heald frames in a skip draft for weaving fabrics with heavy warp thread density?

A) To increase the speed of the weaving process.

B) To reduce the number of warp threads required.

C) To minimize the tension on the warp threads.

D) To distribute the warp threads more uniformly and prevent abrasion due to overcrowding.

14. Which of the following statements describes the classification of woven structures?

A) Simple structures consist of multiple series of warp and weft threads, while compound structures have only one series.

B) Simple structures involve perpendicular interlacing of warp and weft threads, while compound structures involve parallel interlacing.

C) Simple structures have only one series of warp and weft threads, while compound structures may have more than one series.

D) Simple structures form the body or ground of the fabric, while compound structures form the ornamentation.

15. What elements are crucial in the construction of any woven fabric?

A) Material, color, and texture.

B) Design, draft, and lifting plan.

C) Thread count, tension, and speed.

D) Loom type, weaving technique, and pattern.

16. Which of the following statements about crown needles is correct?

A) Crown needles are primarily used in knitting machines.

B) Crown needles have five barbs equally spaced from the point.

C) Crown needles are used to introduce fiber loops in conjunction with random velour needle looms.

D) Crown needles are designed for stitching leather materials only.

17. Which of the following statements regarding needle punching machines is FALSE?

A) Single - board machines can be classified as down stroking or up stroking and have one needle beam.

B) Multi - board machines can be arranged as twin boards with two boards up stroking and down stroking in the same vertical plane.

C) Four - board or quad - punch machines perform simultaneous double - sided needle punching with two sets of up and down - stroking boards.

D) Down - stroking looms are not a common arrangement for flat needle punching applications.

18. How are stains classified based on their solubility?

A) Protein, tannin, oil-based.

B) Water-soluble, solvent-soluble, insoluble.

C) Dye, combination,resin-treated.

D) Fresh, set, aged.

19. The primary purpose of needle - punched geosynthetic clay liners?

A) To increase water permeability.

B) To stabilize soil for construction.

C) To provide high tensile strength.

D) To achieve low water permeability.

20. Consider the following statements :

Assertion (A) : The mechanism of fibre entanglement during hydroentanglement is not fully understood due to the complexities of observing dynamic interactions with water jets.

Reason (R) : Fibre rearrangement in hydroentangled fabrics is influenced by interactions with water, support surfaces, and the turbulent effects within the fluid medium.

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.

21. The machine is commonly used for dyeing of knitted fabrics.

A) Winch machine.

B) Jig machine.

C) Beam machine.

D) Open width machine.

22. Which type of compounds are direct dyes mainly composed of ?

A) Basic azo compounds.

B) Sulphonated azo compounds.

C) Nitro - based compounds.

D) Ester - based compounds.

23. Consider the following statements :

Assertion (A) : Discharge printing is preferred over direct printing processes due to its ability to produce printed materials with large areas of ground color and intricate patterns with clarity and sharpness.

Reason (R) : Discharge printing eliminates the uneven spread of print paste in different directions and prevents the formation of unwanted colors or margins, resulting in superior aesthetic results.

The correct answer is:

A) A is correct, but R is NOT correct.

B) A is NOT correct, but R is correct.

C) A and R are both correct and R is the correct explanation of A.

D) A and R are both correct and R is NOT the correct explanation of A.

24. The problem of frame impression minimized in hand screen and semi-automatic screen printing by:

A) Using specialized printing paste.

B) Reducing the speed of the printing process.

C) Printing alternate screen repeats and filling in gaps.

D) Using thicker fabric for screen printing.

25. Which type of line often suggests movement or action in a composition?

A) Diagonal lines.

B) Zigzag lines.

C) Curved lines.

D) Horizontal lines.

26. Which of the following design principles involves a clear repetition of elements that are the same or only slightly modified?

A) Balance.

B) Rhythm.

C) Emphasis.

D) Proximity.

27. According to the eight - head theory, the height of a normal body structure is considered as :

A) 6 Feet 5 Inch.

B) 5 Feet 4 Inch.

C) 8 Feet 8 Inch.

D) 5 Feet 2 Inch.

28. What is the significance of the imaginary line passing through the nipples and armscye in the eight - head theory?

A) Denotes the waist level.

B) Represents the chin - to - nipple measurement.

C) Indicates the bust level.

D) Measures the distance from the navel to pubic organs.

29. The result of mixing a colour with white is known as.

A) Hue.

B) Shade.

C) Tint.

D) Tone.

30. Which colour would be categorized as a warm colour?

A) Blue.

B) Green.

C) Yellow.

D) Purple.

31. How does the color wheel help designers in creating color schemes?

A) By providing a range of predefined color combinations.

B) By indicating the temperature of each color.

C) By showing how colors interact and complement each other.

D) By suggesting the appropriate saturation levels for colors.

32. How does collage art differ from traditional painting or drawing?

A) It involves assembling different materials onto a surface.

B) It relies solely on digital manipulation techniques.

C) It focuses exclusively on abstract forms and shapes.

D) It emphasizes the use of a single medium for expression.

33. The Colours that cannot be made by mixing other colours, but from which other colours are mixed.

A) Primary colours.

B) Complimentary colours.

C) Monochromatic colours.

D) Transparent colours.

34. What is the typical ease allowance for the bust area in a tight - fitting garment?

A) ½ inch.

B) 3-5 inch.

C) 1 inch.

D) 3-4 inch.

35. Which of the following statements are correct according to pattern - making tools?

1. Tracing wheel is used for transferring the pattern markings on fabrics.
2. Tailor's chalk is used for marking the paper patterns on the cloth.
3. Milton cloth is mostly used for practising drafts by students.

The correct answer/s is/are:

A) 3 only.

B) 2 and 3 only.

C) 1 and 2 only.

D) 1,2 and 3.

36. Which of the following drafting equipments is used to measure and shape the interior part of the leg?

A) Leg - scale.

B) Leg shaper.

C) Leg curve.

D) Leg measurer.

37. When is the measurement method of the flat pattern technique commonly used?

A) When darts need to be removed from the pattern.

B) When darts need to remain in the same seam line.

C) When the pattern needs to be cut into multiple pieces.

D) When creating three - dimensional patterns.

38. What type of grainline is drawn parallel to the center for garments cut on straight grain?

A) Vertical.

B) Bias.

C) Horizontal.

D) Curved.

39. What does proportion refer to in fashion illustration?

A) The size of the paper and design used for drawing.

B) The relationship and balance between different elements in a design.

C) The ratio between the design and paper.

D) The angle at which the model is posed.

40. The principle of design concerned with the overall arrangement of elements in a composition to create a feeling of equilibrium and stability is known as :

A) Visual Composition.

B) Formal Organization.

C) Harmonic Arrangement.

D) Principle of Balance.

41. Which principle of design involves the use of variation and contrast to draw attention to certain elements within a composition?

A) Balance.

B) Emphasis.

C) Rhythm.

D) Harmony.

42. When enlarging a design in basic design principles, what is the primary consideration to maintain?

A) Symmetry.

B) Color balance.

C) Proportion.

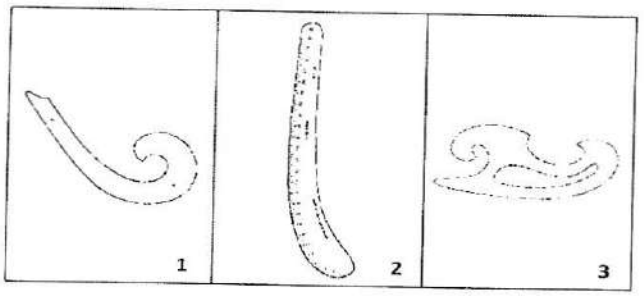
D) Texture.

43. Identify the correct match.

i) French curve.

ii) Vary form curve.

iii) Sleigh curve.



The correct match is:

	i	ii	iii
A)	1	2	3
B)	1	3	2
C)	2	1	3
D)	2	3	1

44. In a replication process in basic design, which of the following best describes the term "replica"?

A) Creating an exact copy of the original design without any modifications.

B) Scaling up the original design to a larger size while maintaining proportions.

C) Making alterations to the original design to suit specific requirements.

D) Enhancing the details and intricacies of the original design.

45. In the context of basic design, which principle emphasizes the arrangement of different elements to create a cohesive whole resembling a unified composition?

A) Fusion Theory.

B) Harmony Construct.

C) Gestalt Principle.

D) Collage Concept.

46. What does the term "biceps level" refer to in sleeve terminology?

A) The distance from the biceps to the wrist.

B) The widest part of the sleeve dividing the cap from the lower sleeve.

C) The location of the elbow dart.

D) The entry point for the hand.

47. Which method in fashion design and pattern making involves directly measuring the body's dimensions?

A) Anthropometry.

B) Pictometry.

C) Sonometry.

D) Calligraphy.

48. What term is used to describe the process of scaling a pattern up or down to create different sizes while maintaining the proportions?

A) Tailoring.

B) Sizing.

C) Grading.

D) Scaling.

49. In fashion design and pattern making, what term refers to the process of adjusting a garment pattern to fit a specific body shape or size?

A) Grading.

B) Draping.

C) Tailoring.

D) Darting.

50. Consider the following statements :

Assertion (A) : The orientation and position of a line can influence a visual message.

Reason (R) : A horizontal line communicates calm and quiet; a Vertical line communicates strength and power.

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.

51. Which drafting tool is commonly used for creating precise curves when drafting a sleeve pattern?

A) French curve.

B) Protractor.

C) T-square.

D) Compass.

52. What does the term "grainline" refer to in pattern making?

A) The direction of the fabric's weave.

B) A decorative stitching technique.

C) The lengthwise center of a pattern piece.

D) A type of pleating method.

53. The fit is defined as a combination of _____.

The correct answer/s is/are:

A) Ease, Line, Style.

B) Line, Grain, Balance.

C) Grain, Balance, Style.

D) Ease, Line, Grain, Balance.

54. Fit evaluation scale contained _____

A) 25 items in 3 categories.

B) 25 items in 5 categories.

C) 15 items in 3 categories.

D) 15 items in 5 categories.

55. 3D virtual design software gives,

1. Texture and colour library.
2. Automatic link to master pattern module.
3. Toolbox for 2D setting.
4. Modifiable dress room measurements.

The correct answer/s is/are:

A) 1 and 2 only.

B) 1,2 and 3 only.

C) 1 and 3 only.

D) 1,2 and 4 only.

56. The volume Index (VI), being equal to zero when the garment is ____

A) Loose fitting.

B) Sloppy fitting.

C) Close fitting.

D) Relaxed fitting.

57. The Syflex LLC system can claims _____

A) Slow speed.

B) Allows a precise control over the surface.

C) Simulator does not adapt to any collisions.

D) Used for cotton only.

58. According to garment fit, Increasing the air permeability of chemical protective clothing helps to

A) Increase heat strain.

B) Reduce heat strain.

C) Increase and decrease heat strain.

D) Remain same.

59. Consider the following statements :

Assertion (A) : The 3D system can provide a remote communication tool for industrial partners to discuss the 3D clothing fit.

Reason (R) : A 3D system may lead to a more effective decision - making process of product development.

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. The amount of fabric added above and beyond the body dimension at various body location is called as _____

A) Garment ease.

B) Garment grain.

C) Garment balance.

D) Garment line.

61. In garment construction, additional body measurements are called as _____.

A) Primary dimensions.

B) Secondary dimensions.

C) Tertiary dimensions.

D) Dropping dimensions.

62. The main clothing drivers are _____

1. Demographics.
2. Lifestyle.
3. Income.
4. Product attributes.

The correct answer/s is/are.

A) 1 and 2 only.

B) 1,2 and 3 only.

C) 1 and 3 only.

D) 1,2,3 and 4.

63. The purpose of a section marker is _____

A) Processing only large orders of the same size.

B) Aiding in processing small orders of different sizes efficiently.

C) Spreading fabric face up.

D) Utilizing a stepped lay for symmetric garments.

64. _____ process can be carried out in continuous markers to minimize fabric wastage.

A) Spreading fabric face down.

B) Using a stepped lay for symmetric garments.

C) Cutting fabric across the width and overlapping in case of fabric faults.

D) Utilizing section markers for known size ratios.

65. Splice marks typically placed in _____

A) Along the fabric defect line.

B) At the centre of the fabric.

C) Along the control selvedge.

D) At the end of the fabric roll.

66. Arrange the sequence of tools required for pattern - making process.

1. Measuring devices - Drafting devices - Marking devices - Cutting devices.
2. Drafting devices - Measuring devices - Marking devices - Cutting devices.
3. Marking devices - Measuring devices - Drafting devices - Cutting devices.
4. Measuring devices - Cutting devices - Drafting devices - Marking devices.

Choose the correct option:

A) 1

B) 2

C) 3

D) 4

67. _____ causes for bowing in fabric during spreading.

A) Excessive tension along the lengthwise grain.

B) Additional bending of the cross - grain weft down the table.

C) Uneven cutting of the fabric.

D) Excessive pressure applied during spreading.

68. The function of a cold notcher in garment production is _____

A) It heats fabric edges to prevent fraying.

B) It marks the fabric for cutting.

C) It creates notches in fabric panels.

D) It smoothens fabric surfaces.

69. The primary limitation of using a short knife for cutting fabric is _____

A) It cannot accurately cut through multiple layers of fabric.

B) It requires lightweight fabrics for cutting.

C) It distorts several fabric layers while cutting.

D) It is only suitable for cutting single layers of fabric.

70. The primary function of the hand wheel in sewing machines is _____.

A) Adjusting thread tension.

B) Automatically threading the needle.

C) Winding the bobbin.

D) Raising and lowering the sewing needle manually.

71. _____ is the primary function of the pressure foot in a sewing machine.

A) To thread the needle.

B) To grip the fabric and move it through the machine.

C) To adjust the thread tension.

D) To raise and lower the sewing needle.

72. A synchronous tooth belt used in a double needle lock stitch machine is _____.

A) Driving the machine.

B) Regulating stitch length.

C) Lubricating the machine.

D) Adjusting thread tension.

73. _____ factor determines the shape of the needle hole in the throat plate in the sewing machine.

A) The type of fabric being sewn.

B) The width of the stitch.

C) The type of sewing machine.

D) The type of stitch being used.

74. Blind loopers are used in _____ types of sewing machines.

A) Machines with bobbin and bobbin case arrangement.

B) Machines with automatic threading feature.

C) Machines in classes 100, 101, 102, and some classes 500.

D) Machines with a built - in bobbin winder.

75. The classification of sewing threads cannot be based on _____

A) Substrate.

B) Construction.

C) Strength.

D) Finish.

76. Factors affecting performance of sewing threads are _____

1. Seam strength.
2. Abrasion resistance.
3. Elasticity.
4. Colour fastness.

The correct answer/s is/are:

A) 1 and 3 only.

B) 2 and 3 only.

C) 1,2,3 only.

D) 1,2,3, and 4.

77. The factors that decide the characteristics of the fused laminates are _____.

1. Base fabric of the interlining.
2. Type of fusible resin.
3. Pattern of application of resin to the base cloth.

The correct answer/s is/are:

A) 1 and 2 only.

B) 1 and 3 only.

C) 2 and 3 only.

D) 1,2 and 3.

78. Consider the following statements :

Assertion (A) : Two - Piece Plackets are mostly used as an opening in the left side of skirts.

Reason (R) : The stitching line of the placket and the stitching line of the seam of the garment in line with each other.

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.

79. The functions of interlining are.

1. To retain the contour of the garment.
2. To strengthen the garment components.
3. To make the garment stronger and more attractive.
4. To support the garment.

The correct answer/s is/are:

A) 1,2 and 3 only.

B) 1,2 and 4 only.

C) 2,3 and 4 only.

D) 1,2,3 and 4.

80. Consider the following statements :

Assertion (A) : A 401 chain stitch or 301 lock stitch class of stitches is normally used for seaming bound seams.

Reason (R) : This seam utilised for finishing sleeve hems, necklines, and finishing seams on unlined jackets and coats.

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.

81. Consider the following statements according to class 500: Over - Edge Chain Stitches,

1. Stitches have high elasticity.
2. Do not unravel easily.
3. These stitches are used for 'butt - seaming'.

The correct answer/s is/are:

A) 1 only.

B) 2 only.

C) 1 and 3 only.

D) 1,2 and 3.

82. Consider the following statements :

Assertion (A) : Inverted pleats can be obtained by reversing the box pleat.

Reason (R) : These kinds of pleats are utilised commonly in uniforms and skirts.

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.

83. In garment manufacturing, what role does the grain line play in marker positioning?

A) It influences the draping quality of the garments.

B) It determines the cutting direction of the fabric.

C) It indicates the center of the marker layout.

D) It ensures symmetrical cutting of garment panels.

84. The primary goal of marker making in garment manufacturing is to _____.

A) Maximize fabric wastage.

B) Achieve the most visually appealing layout.

C) Find the most efficient arrangement of pattern pieces.

D) Minimize cutting precision.

85. Why is it important to count the number of patterns in the marker plan?

A) To ensure efficient marker utilization.

B) To verify the completeness of the pattern set.

C) To determine the cutting precision.

D) To facilitate pattern coding.

86. _____ represents the area in the cutting table where the fabrics are overlapped during the run out of fabric rolls or elimination of fabric defects during spreading.

A) Splice marks.

B) Legend.

C) Selvedge lines.

D) Beginning line.

87. How does the type of fabric influence ply direction and lay stability during spreading?

A) It determine the shape of the pattern.

B) It influences the spreading equipment used.

C) It dictates whether the fabric is spread face up or face down.

D) It affects the alignment of plies.

88. How can static electricity buildup within a fabric lay during spreading be addressed?

A) By relaxing the fabric overnight.

B) By using anti - fusion paper during cutting.

C) By cutting into the selvedge to release tightness.

D) By smoothing out unnecessary folds during spreading.

89. Which cutting method uses vibration frequencies to produce blade movement and does not require a bristle base on the cutting table?

A) Computer - controlled knife - cutting.

B) Plasma cutting.

C) Ultrasonic cutting.

D) Laser cutting.

90. What is the purpose of a thread marker in garment manufacturing?

A) To cut inside slashes for interior pockets.

B) To create permanent notches in fabric edges.

C) To drill tiny circles of fabric plies for identification marks.

D) To indicate the location of a drill hole with thread left in the fabric.

91. Which device uses a needle to penetrate all fabric plies in a lay, leaving thread to indicate the location of a drill hole?

A) Cold drill.

B) Hot drill.

C) Thread marker.

D) Inside slasher.

92. Arrange the following steps in the correct sequence for garment production :

Options :

A) Marker making, Fabric spreading, Placing marker paper on the lay, Cutting.

B) Fabric spreading, Marker making, Placing marker paper on the lay, Cutting.

C) Cutting, Placing marker paper on the lay, Fabric spreading, Marker making.

D) Placing marker paper on the lay, Marker making, Fabric spreading, Cutting.

93. _____ category of garments requires no pressing.

A) Single - ply garments.

B) Foundation garments.

C) Men's jackets.

D) Women's tailored jackets.

94. Match the cutting process with its corresponding description :

Set 1 : Cutting Process	**Set 2 : Descriptions**
i) Accuracy of Cut	1. Ensuring fabric components match pattern shapes accurately.
ii) Clean Edges	2. Preventing fraying or snagging on fabric edges after cutting.
iii) Support of the Lay	3. Maintaining the uniform quality of cutting by adjusting the lay height based on the cutting method employed.
iv) Consistent Cutting.	4. Providing support for fabric layers during the cutting process.

Options :

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

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

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

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

95. The purpose of applying pressure in the pressing process is _____.

A) To soften the fibers.

B) To stabilize and set the fabric.

C) To change the form and increase durability.

D) To transmit heat onto the fabric.

96. What feature should be considered when ironing fabrics sensitive to lustre?

A) Using a wide iron.

B) Using a dry iron.

C) Using a Teflon - coated sole.

D) Using a pointed shape iron.

97. Which component of the pressing process is essential for easing the fabric from tension?

A) Heat.

B) Pressure.

C) Time.

D) Drying.

98. The main function of a steam press in garment pressing is ____

A) Drying the garment.

B) Applying heat evenly.

C) Sandwiching the garment for pressing.

D) Inflating the garment with air.

99. What are the two main criteria for package design?

A) Aesthetic and cost - effectiveness.

B) Functional and sales requirements.

C) Branding and marketing strategy.

D) Environmental sustainability and consumer appeal.

100. What role does packaging play in the merchandising function?

A) Protecting the product during transportation.

B) Stimulating consumer desire for purchasing.

C) Ensuring proper storage of garments.

D) Identifying the product for retailers

ROUGH WORK

ROUGH WORK

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

Booklet Serial No. 232541

Test Booklet Series

A

TEST BOOKLET
ELECTRICAL ENGINEERING
LECTURER - I
Written Test - 2024
(74)

Time Allowed: Two Hours ***Maximum Marks: 100***

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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 **100** 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.

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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. A toroidal air cored with 2000 turns has a mean radius of 25 cm, the diameter of each turn being 6cm, If the current in the coil is 10A. The MMF, flux and flux density are.

A) 20,000A , $4.48=10^{-8}$ Wb, 1.6×10^{-2} wb/m^2.

B) 20 A, 4.48×10^{-8} Wb, 16×10^{-2} wb/m^2.

C) 2000 A, 44.8×10^{-8} Wb, 1.6×10^{-2} wb/m^2.

D) 200A, 4.48×10^{-8} Wb, 1.6×10^{-2} wb/m^2.

2. Find the exciting current and total flux in an iron ring 10 cm in mean diameter and 10cm2 in cross section and wound with 150 turns of wire. The flux density is 0.1Wb/m^2 and the permeability is 800.

A) 2.0833×10^3A

B) 2083.3×10^3 A.

C) 20.833×10^3A

D) 208.33×10^3A.

3. Match the following :

	List - I		**List - II**
1.	MMF	i.	$1_1/\mu 0\mu$ rlal+$1_2/\mu 0\mu$ r2a2
2.	Magnetic field intensity	ii.	NI.(A).
3.	Total Reluctance, ST	iii.	NI/1 (A/m).

The correct match is:

A) 1-ii, 2-iii, 3-i.

B) 1-i, 2-iii, 3-ii.

C) 1-ii, 2-i, 3-iii.

D) 1-i, 2-ii, 3-iii.

4. Two coils A and B lie in parallel planes. Coil A has 15000 turns and B has 12000 turns. 55% of flux produced by coil A links B. A current of 6A in the coil produces 0.05mWb, while the same current in coil B produces 0.08, Wb.

The mutual inductances and the coupling co-efficient are

A) 0.055H and 0.389.

B) 0.55H and 0.389

C) 55 H and 0.389.

D) 0.055H and 03.89.

5. ____ is the flux per unit area at right angles to the flux.

A) Magneto motive force.

B) Magnetic flux density.

C) Magnetic field intensity.

D) Magnetising force.

6. Match the following - commercial heating elements.

	List - I	**List - II**
1.	Ni-chromium	i. 950°C.
2.	Nickel-Cr-Fe	ii. 1150°C.
3.	Ni-Cu	iii. 1200°C.
4.	Fe-Cr-Al	iv. 400°C.

The correct match is:

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

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

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

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

7. Which of the following is true about the power factor?

A) $\text{Sin}\phi$ = Truepower/Apparent power.

B) $\text{Cos}\phi$ = Truepower/Apparent power.

C) $\text{Sin}\phi$ = Apparentpower/Truepower.

D) $\text{Cos}\phi$ = Apparentpower/Truepower.

8. Two impedance $Z_1 = 5 - j\ 13.1\ \Omega$ and $Z_2 = 8.57 - j6.42\Omega$ are connected in parallel across a voltage of (100+j200) volts. Find the total power consumed in the circuit.

A) 500.821W

B) 50.082W.

C) 5008.212W

D) 50082.2W.

9. A series circuit with L = 0.1 H, C = 50 uF and R = 10Ω is connected to a 50 V power supply. Find resonant frequency and frequencies at which maximum voltage appears across the L and C.

A) 7.18Hz, 7.28 Hz, 7.08 Hz.

B) 701.18Hz, 702.28 Hz, 712.08 Hz.

C) 71.18Hz, 70.28 Hz, 72.08Hz.

D) 51.18Hz, 50.28Hz, 52.08 Hz.

10. The reserve batteries can be classified by the type of activating medium or mechanism that is involved in the activation methods.

i. Water activated.

ii. Electrolyte - activated.

iii. Gas - activated.

iv. Heat activated.

The correct answer is:

A) ii only.

B) i and ii.

C) iii and iv.

D) All of the above.

11. Determine the DC gain DC beta and the emitter current I_E for a transistor where I_B 50 mA and I_C 3.65 mA. DC Beta and I_E respectively,

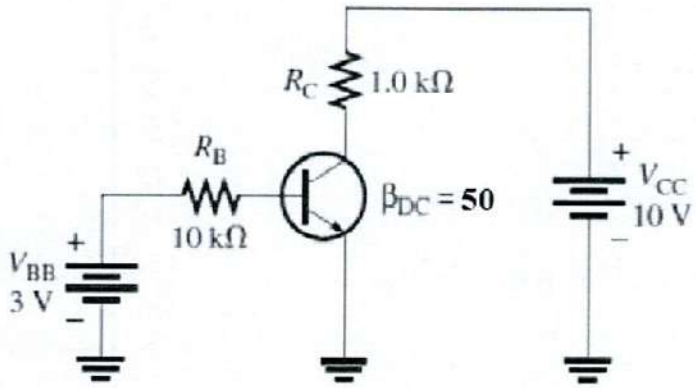
A) 73 and 3.70 mA.

B) 53 and 3.70 mA.

C) 73 and 37 mA.

D) 53 and 37 mA.

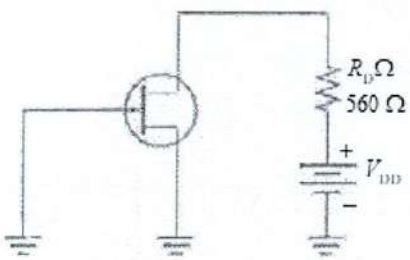
12. Determine whether the given transistor is in saturation if VCE(sat) = 0.2 V?



The correct answer is:

A) Saturated.
B) Not saturated.
C) Cut - off.
D) Forward bias.

13. If $V_{GS}(off) = -4$ V and $I_{DSS} = 12$ mA in the given JFET, determine the minimum value of V_{DD} required to put the device in the constant - current region of operation when V_{GS}=0V.



A) -1.07V
B) -10.7V
C) 10.7V
D) 1.07V

14. In a synchronous motor, the rotor copper losses, are met by
A) Motor input.
B) Armature input.
C) Supply lines.
D) DC sources.

15. A certain diff - amp has a differential voltage gain of 2000 and a common - mode gain of 0.2. Determine the CMRR and express it in decibels.

A) 10,000, 80dB.

B) 8000, 100dB.

C) 10000, 100dB.

D) 8000, 80dB.

16. Match the following :

	Substance		**Resistivity**
1.	Copper	i.	1.7×10^{-8} ohm m
2.	Glass	ii.	10^{-4} ohm m.
3.	Nichrome	iii.	9×10^{11} ohm m

A) 1-i, 2-iii, 3-ii.

B) 1-ii, 2-iii, 3-i.

C) 1-i, 2-ii, 3-iii.

D) 1-iii, 2-i, 3-ii.

17. For frequencies below the resonant frequency, a parallel LC circuit behaves as a _____ load.

A) Inductive.

B) Resistive.

C) Capacitive.

D) Both (B) & (C).

18. Consider the following statements :

Assertion (A) : An analogue switch is used to sample an audio signal with a maximum frequency of 8 kHz. The sampling frequency is 16kHz.

Reason (R) : The sampling frequency must be greater than 16 kHz.

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.

19. Match the following.

List - I	List - II
i. Diode	1. Voltage regulation.
ii. Zener diode	2. Resonant bandpass filter.
iii. Varactor diode	3. Rectifier.

Correct match is:

A) i-3, ii-1, iii-2.

B) i-1, ii-2, iii-3.

C) i-2, ii-3, iii-1.

D) i-3, ii-2, iii-1.

20. The input voltage is 50 mV peak - to - peak which is 35.4 mV rms. Determine the efficiency of the power amplifier.

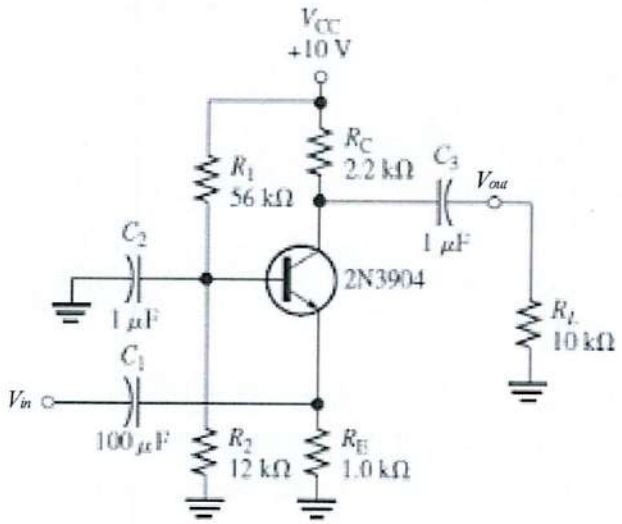
A) 149 nW.

B) 149 mW.

C) 149 kW.

D) 149 MW.

21. If Beta DC = 250, find the input resistance for the amplifier in figure.



A) 24.5 ohm.

B) 44.5 ohm.

C) 14.5 ohm.

D) 34.5 ohm.

22. The drift velocity is in units of _____.

i. m/s.

ii. m^2/s.

iii. V/m.

iv. Vm.

Choose the correct option:

A) i only.

B) i and iii.

C) ii and iii.

D) iv only.

23. Match the following materials with its conductivity.

	List - I		**List - II**
1.	Aluminium (annealed)	i.	10.30×10^6
2.	Copper (annealed standard)	ii.	35.36×10^6
3.	Iron (99.99+%)	iii.	58.00×10^6

Choose the correct option:

A) 1 - ii, 2-iii, 3-i.

B) 1 - i, 2-ii, 3-iii.

C) 1 - iii, 2-i, 3-ii.

D) 1 - i, 2-iii, 3-ii.

24. Consider the following statements :

Assertion (A) : In electric heating, melting, deep heat penetration through heating is a particular type.

Reason (R) : 500 Hz to 10 KHz used as frequency. Greater than 10 KHz is used for surface heating purposes only.

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.

25. The phenomena of superconductors were first discovered by _____

A) Kammerlingh Onnes.

B) Neils Bohr.

C) Richard Smalley.

D) Otto Lehman.

26. The 8051 architecture the external enable available in the pin.

i. 32.

ii. 36.

iii. 37.

iv. 31.

The correct answer is:

A) i and ii.

B) ii only.

C) iii and iv.

D) Only iv.

27. The most common applications of ferroelectrics stem from a closely related phenomenon,_____

A) Piezoelectricity.

B) Electricity.

C) Transducer.

D) Conductor.

28. Copper and nickel alloys are especially _____ for chemical and temperature ____ for electrical and magnetic applications.

A) Attractive, resistance.

B) Soft, hard.

C) Brittle, malleable.

D) Repulsion, malleable.

29. Consider the following :

Assertion (A) : The magnitude of the magnetic dipole, or magnetic moment, due to electron spin is the Bohr magneton.

Reason (R) : It can be a positive quantity (for "spin up") or negative (for "spin down") T.

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.

30. Which of the following is/are undesirable qualities of static characteristics?

i. accuracy.

ii. sensitivity.

iii. drift.

iv. reproducibility.

The correct answer is:

A) iii only.

B) i and ii.

C) iii and iv.

D) All of the above.

31. Creeping in a single - phase induction energy meter may be due to ____

A) Overcompensation of friction.

B) Overvoltage.

C) Vibrations.

D) All of the above.

32. Consider the following :

Assertion (A) : The power in a 3-phase circuit is measured with the help of 2 wattmeters. The readings of one of the wattmeters are positive and the other one is negative.

Reason (R) : The magnitude is different. It can be concluded that the power factor of the circuit is less than 0.5 lagging.

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.

33. Quadrant Electrometer instrument is used for measurement of voltages ranging from about _____ to _____.

A) 100 V to 1000 V.

B) 100 V to 20kV.

C) 20kV to 30 kV.

D) 33kV to 66kV.

34. A heliport is provided with 400 turns/mm. The gearing arrangements are such that the motion of the main shaft causes 5 revolutions of the potentiometer shaft to calculate the resolution of the potentiometer.

A) 5 micrometer.

B) 50 micrometer.

C) 15 micrometer.

D) 12 micrometer.

35. The dynamic characteristics of capacitive transducers are similar to those of

A) Low pass filter.

B) high pass filter.

C) bandpass filter.

D) notch filters.

36. The main function of an equalizer bar is to make the parallel operation of two over - compounded DC generators.

A) Possible.

B) Stable.

C) Smooth.

D) Regular.

37. In a clockwise rotating loaded DC generator brushes have to be shifted

A) Clockwise.

B) Counterclockwise.

C) Either (A) or (B).

D) Neither A nor B.

38. A DC series motor takes 40A and 220V and runs at 8000 RPM. If the armature and filed resistance are 0.2 ohm and 0.1 ohm. The iron losses are 0.5 kW. The torque and output power of the motor are ____ and _____.

A) 19.3Nm and 7.82kW.

B) 9.93Nm and 70.82kW.

C) 99.3Nm and 7.82kW

D) None of the above.

39. Match the following :

List - I	**List - II**
1. DC series motor	i. Reciprocating pumps
2. Squirrel cage Induction motor	ii. Traction and hoisting.
3. DC shunt motor	iii. Rolling mill

Correct match is:

A) 1-ii 2-iii 3-i

B) 1-i 2-iii 3-ii

C) 1-ii 2-i 3-iii.

D) 1-i 2-ii 3-iii.

40. Thrust developed by a linear induction motor depends on

A) Synchronous speed.

B) Rotor input.

C) Number of poles.

D) Both A and B.

41. A 6-pole 3-phase induction motor having 25kW from a 50Hz supply is cumulatively cascaded to a 4-pole motor. Neglecting all losses, the speed of the 4-pole motor would be ___ RPM.

A) 1000.

B) 1500.

C) 600.

D) 3000.

42. Usually, large motors are more efficient than small ones. The efficiency of the tiny motor used in a wristwatch is approximately _____ percentage.

A) 1

B) 10

C) 30

D) 23

43. The frequency of the EMF in the stator of a 6-pole induction motor is 50 Hz and that in the rotor is 2.5Hz, What speed is the motor running?

A) 1050 RPM.

B) 1010 RPM.

C) 950 RPM.

D) 1500 RPM.

44. Two single - phase transformers are connected in delta supply 99A per line to a three - phase 3 wire system. Find the correct match in which the current in each of the remaining transformers if the line current corresponds to the ratings.

A) Transformer current = 57.15A Line current = 57.15A.

B) Transformer current = 571.5A Line current = 7.15A.

C) Transformer current = 5.15A Line current = 57.15A.

D) Transformer current = 57.5A Line current = 50.15A.

45. An induction motor has an efficiency of 0.88 when the load is 50 HP. At this load the stator copper loss and rotor copper loss each equal to the iron loss. The mechanical losses are one - third of the no - load losses. The slip value is

A) 0.028.

B) 0.28.

C) 0.002.

D) 0.0018.

46. Star delta starting of motors is possible in the case of

i. Single phase motor.

ii. Variable speed motor.

iii. Low horsepower motor.

iv. High - speed motors.

The correct answer is:

A) ii, iii and iv.

B) i and iii.

C) ii and iii.

D) i only.

47. The term cogging is associated with

A) Three - phase induction motor.

B) Compound Generators.

C) DC series motor.

D) Transformer.

48. When a two-winding transformer is operated with lower copper losses, its efficiency.

A) Doubled.

B) Remain same.

C) Rise to 14%.

D) Increase.

49. A 6 pole, 50 Hz, 7.35kW motor at rated voltage and frequency has a starting torque of 125% and a maximum torque of 200% of full load torque. The full load speed and maximum speed are

List - I	**List - II**
1. Full load speed	i. 645RPM
2. Maximum speed	ii. 905 RPM.
	iii. 1050 RPM.

Correct matches are:

A) 1-ii 2-i.

B) 1-iii. 2-ii.

C) 1-i, 2-iii.

D) 1-i, 2-ii.

50. A single stack 4-phase, 6-pole VR stepper motor will have a steep angle of

A) 15°

B) 25°

C) 30°

D) 45°

51. The electrical displacement between the two stator windings of a resolver is

A) 90°

B) 0°

C) 45°

D) 60°

52. If the load angle of a 4-pole synchronous motor is 8° (electrical) its value in mechanical degree is _____.

A) 4°

B) 2°

C) 0.5°

D) 0.25°

53. When a 400 HZ transformer is operated at 50 Hz, its kVA rating is

A) reduced to 1/8 times.

B) increased by 8 times.

C) remain same.

D) increased by 32 times.

54. A 3 - phase, 440 V, 50 Hz, 40 pole, Y - connected induction motor has a rotor resistance of 0.1 ohms and reactance of 0.9 ohms per phase. The ratio of stator turns is 3.5, find the gross output at a slip of 5%.

A) 7250W

B) 72.50W

C) 725.25W

D) 35.27W

55. As the load on an alternator is varied, its terminal voltage is found to vary as in DC generators. This variation in terminal voltage (V) is due to the following reasons.

1. Voltage drop due to armature resistance.
2. Drop due to armature leakage reactance.
3. Same phase sequence.
4. Drop due to armature reaction.

The correct answer is

A) Only 1, 2 and 3.

B) Only 1, 2 and 4.

C) Only 2, 3 and 4.

D) 1, 2, 3 and 4.

56. The error detector is a _____ device that produces a resultant signal

A) Summing.

B) Subtractor.

C) Multiplier.

D) Dividing.

57. _____ rules are given to help simplify the block diagram of a control system and represent in canonical form :

A) 6

B) 3

C) 1/6

D) 1

58. Sensitivity is

1. Ratio of relative variation of the overall transfer function of the system due to variation of G(s).
2. Sinusoidal function of s.
3. Ratio of Exponential and sinusoidal function of s.

The correct answer is:

A) Only one statement is correct.

B) Only two statements are correct.

C) All statements are correct.

D) None correct.

59. Find the Transfer Function for a Differential Equation given below dc(t)/dt+ +2c(t)=r(t).

A) 3s+2/(s-1).

B) 3s-2/(s-1).

C) s+2/(3s-1).

D) 1/s+2.

60. The step response of a second - order system that is characterized by overshoot

A) Overdamped.

B) Critically damped.

C) Under damped.

D) Un damped oscillatory.

61. The amount that the waveform overshoots the steady-state, or final, value at the peak time, expressed as a percentage of the steady-state value is

A) Rise time.

B) Peak time.

C) Percent overshot.

D) Settling time.

62. The binary representation of the decimal number 1.375 is,

A) 1.111.

B) 1.011.

C) 1.010.

D) 1.001.

63. If the output of an Exclusive OR gate was passed to a NOT gate's input, the NOT gate output would be "True" if :

i. Input "A" was True and input "B" is false.

ii. There is only one input, and the output would be True if the input was False.

iii. A dot was placed on the output of the Exclusive OR symbol.

iv. Both inputs were in the same state (either True or False).

The correct statements are:

A) iv only.

B) i and ii.

C) i, ii and iii.

D) ii only.

64. The octal equivalent of the Hex number AB.CD is

A) 253.314

B) 526.314.

C) 253.632

D) 526.632.

65. Mechanical energy is supplied to a DC generator at the rate of 4200 J/s. The generator delivers 32.2 A at 120 V.

i. What is percentage efficiency of the generator?

ii. How much energy is lost per minute of operation.

Choose the correct option:

A) i-92%, ii-20160 J.

B) i-90%, ii-20.16J.

C) i-95%, ii-20160J.

D) i-92%, ii-201.60 J.

66. A thermal station has the following data : Max. demand = 20,000 kW; Load factor = 40%, Boiler efficiency = 85%; Turbine efficiency = 90%, Coal consumption = 0.9 kg/kWh; Cost of 1 ton of coal = Rs. 300, Determine (i) thermal efficiency and (ii) coal bill per annum.

A) 72.5% & 1,89,21,600.

B) 7.65% & 1,89,21,6.

C) 76.5% & 1,89,21,60.

D) 76.5% & 1,89,21,600.

67. What is the power output of a $_{92}U^{235}$ reactor if it takes 30 days to use up 2 kg of fuel? Give that energy released per fission is 200 MeV and Avogadro's number = 6.023×10^{26} per kilomole. What is the energy released per second?

A) 63.2MW.

B) 6.23MW.

C) 70.23MW.

D) 7.02MW.

68. Consider the following statements :

Assertion (A) : The area under the daily load curve divided by the total number of hours gives the average load on the station in the day.

Reason (R): Average load = Area (in kWh) under daily load curve /24 hours.

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.

69. The maximum demand for a power station is 100 MW. If the annual load factor is 40%, calculate the total energy generated in a year.

A) 3504×10^5kWh.

B) 35.04×10^5kWh.

C) 3600×10^5kWh.

D) 4504×10^5kWh.

70. Match the following :

List - II (Insulator)	**List - II (Range)**
1. Pin type	i. up to 33KV
2. Suspension type	ii. greater than 33 KV.
3. Strain type	iii. less than 11 KV.

The correct match is:

A) 1-i, 2-ii, 3-iii.

B) 1-iii, 2-ii, 3-i.

C) 1-ii, 2-i, 3-iii.

D) 1-i, 2-iii, 3-ii.

71. In a 33 kV overhead line, there are three units in the string of insulators. If the capacitance between each insulator pin and earth is 11% of the self - capacitance of each insulator, find (i) the distribution of voltage over 3 insulators and (ii) string efficiency.

List - I		List - II	
1.	V1	i.	7.4 kV
2.	V2	ii.	5.52 kV
3.	V3	iii.	85.8%.
4.	String efficiency	iv.	6.13 kV.

The correct match is:

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

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

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

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

72. A trip coil of the circuit breaker is energized by

A) DC voltage.

B) AC voltage.

C) AC or DC voltage.

D) No supply is required.

73. A single - core cable has a conductor diameter of 1cm and insulation thickness of 0.4 cm. If the specific resistance of insulation is $5\times10^{14}\ \Omega\text{-cm}$, calculate the insulation resistance for a 2 km length of the cable.

A) 230 MΩ.

B) 320 MΩ.

C) 720 MΩ.

D) 234 MΩ.

74. Murray loop test is performed on a faulty cable 300 m long. At balance, the resistance connected to the faulty core was set at 15 Ω and the resistance of the resistor connected to the sound core was 45 Ω. Find the distance of the fault point from the test end.

A) 50M

B) 250M

C) 350M

D) 150M

75. The essential features of switchgear are.

i. Complete reliability.

ii. Absolutely certain discrimination.

iii. Provision for manual control.

iv. Provision for instruments.

The correct features are:

A) Only one feature.

B) Only two features.

C) Only three features.

D) All features.

76. For voltages beyond 66 kV, switchgear equipment is installed .....

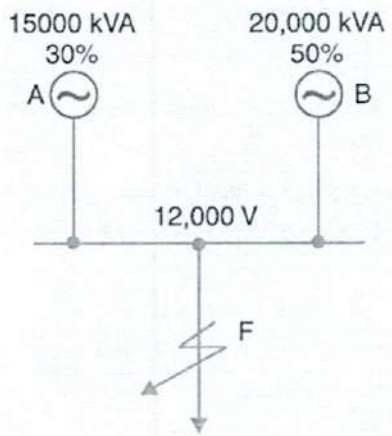
A) Indoor.

B) Outdoor.

C) Indoor or outdoor.

D) Both indoor and outdoor.

77. The single - line diagram of a 3- phase system is shown.



The percentage reactance of each alternator is based on its own capacity. Find the short - circuit current that will flow into a complete 3 - phase short - circuit at F.

A) 1584A.

B) 1684A.

C) 1784A.

D) 1884A.

78. In applications where energy efficiency is a priority, which motor type is often selected for its high efficiency and ability to operate at variable speeds?

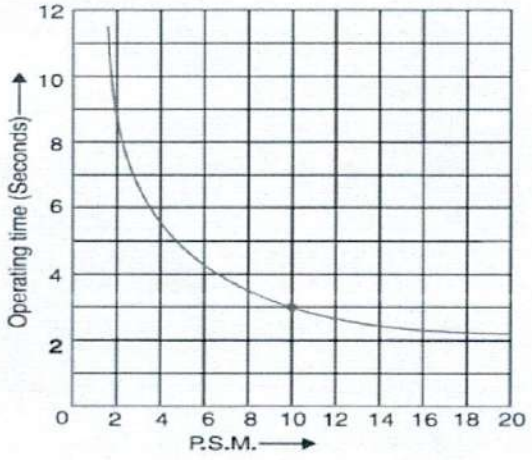
A) Induction motor.

B) Synchronous motor.

C) DC motor.

D) Universal motor.

79. Determine the time of operation of a 5-ampere, 3-second overcurrent relay having a current setting of 125% and a time setting multiplier of 0.6 connected to the supply circuit through a 400/5 current transformer when the circuit carries a fault current of 4000 A.



A) 1.1 sec.

B) 3.02 sec.

C) 2.1 sec

D) None of the above.

80. A star - connected, 3 - phase, 10 - MVA, 6.6 kV alternator has a per - phase reactance of 10%. It is protected by the Merz - Price circulating - current principle which is set to operate for fault currents not less than 175 A. Calculate the value of earthing resistance to be provided in order to ensure that only 10% of the alternator winding remains unprotected.

A) $r = 1.171\,\Omega$.

B) $r = 3.171\,\Omega$.

C) $r = 2.171\,\Omega$.

D) $r = 4.171\,\Omega$.

81. A 3 - phase transformer of 220/11,000 line volts is connected in a star/delta. The protective transformers on the 220 V side have a current ratio of 600/5. What should be the CT ratio on the 11,000 V side?

A) 12:5.

B) 15:2.

C) 1.385:1.

D) 1000:1.

82. The junction capacitance of a thyristor is 25pF. The latching current of the thyristor is 15mA. If a capacitor 100pF is connected across the thyristor, determine the critical dv/dt.

A) 0.12×103V/uS.

B) 1.2×103V/uS..

C) 12×103V/uS.

D) 0.012×103V/uS.

83. A two - pulse midpoint converter feeds a highly inductive load having a resistance of 15 ohms. It is fed from a 220 v, 50 Hz source using a centre - tapped transformer having a turns ratio of 1:1:1. For a firing angle of 60°. The load current, primary current, fundamental current, and rms value of harmonic content are

	List - I		**List - II**
i.	Load current	1.	2.876A
ii.	Fundamental current	2.	5.94A
iii.	Rms value of harmonic content	3.	6.6A

The correct match is:

	i	ii	iii
A)	1	2	3
B)	1	3	2
C)	3	2	1
D)	2	3	1

84. The single - phase full converter has an RL load having an inductance of 6.5 mH, resistance of 0.5 ohm, and E=10V. The input voltage is Vs=120 V at rms 60Hz. Determine the load current I_{Lo} at $\hat{}\alpha = 60^{o}$.

A) I_{Lo}=49.34A.

B) I_{Lo}=490.34A.

C) I_{Lo}=4.934A.

D) I_{Lo}=4900.34A.

85. The buck regulator has an input of Vs=12V. The required average output voltage is Va=5V. The peak - to - peak ripple voltage is 20 mV. The switching frequency 25kHz. If the peak - to - peak ripple current of the inductor is limited to 0.8 A. The duty cycle, filter inductance and capacitance respectively.

The correct answer is:

A) 41.68%, L = 145.84 μ H, C = 200 μ F.

B) 41.69%, L = 145.85 μ H, C = 200 μ F.

C) 41.70%, L = 145.86 μ H, C = 200 μ F.

D) 41.67%, L = 145.83 μ H, C = 200 μ F.

86. The buck regulator has an input voltage of Vs = 12v. The required output voltage is Va=5 and the peak - to - peak output ripple voltage is 20 mV. The switching frequency is 25kHz. If the peak - to - peak ripple current of the inductor is limited to 0.8A. Find the duty cycle.

A) 41.47%

B) 41.67%

C) 42%

D) 2.4%

87. A _____ chopper generates harmonics of variable frequencies and filter design becomes _____.

A) Variable frequencies, easy.

B) Fixed frequencies, difficult.

C) Variable frequencies, Difficult.

D) Fixed frequencies, easy.

88. In a single phase dual converter, is operating from a 120V, 60Hz, supply, and the load resistance is R = 10 ohm. The circulating inductance is L = 40mH. Delay angles are $\alpha 1 = 60^{o}$ and $\alpha 2 = 120^{o}$. Find the peak circulating current and the peak current of converter1.

A) 11.25 A, & 16.97 A.

B) 16.97 A, & 28.22 A.

C) 1.25A, & 1.67A.

D) 112.5 A, & 16.97 A.

89. In single - phase cycloconverters, the instantaneous values of two output voltages _____.

A) May be equal.

B) (input voltage/2)$^{-1}$.

C) (input voltage/output voltage)$^{-1/2}$.

D) May not be equal.

90. In the AC voltage controller, the Harmonics content is ____ and the input power factor is ____.

A) High - high.

B) Low - low.

C) High - low.

D) Low - high.

91. A cycloconverter is _____

A) One - stage power converter.

B) One - stage voltage converter.

C) One - stage frequency converter.

D) None of the above.

92. For high frequency application of over 10KW power rating ____ types of diodes are used.

i. Power frequency.

ii. Schottky.

iii. Medium recovery.

iv. Fast Recovery.

The correct answer is:

A) i and ii

B) i only.

C) iv only.

D) i,ii and iii.

93. Switching pair of three - phase voltage source 120 mode inverter.

A) 1,2,3,4,5,6,1

B) 61,12,23,34,45,56,61.

C) 612,123,234,345,456,561.

D) All of the above.

94. The external enable pin of 8051 micro - controller is _____ pin

A) 31

B) 32

C) 33

D) 30

95. In 8085 Processor has _____ flags?

A) S,Z,AC,P,CY.

B) OV,AC,P,CY.

C) S,Z,P,CY.

D) S,Z,AC,P,OV.

96. Match the following :

In the architecture of 8085 microprocessor.

List - I	List - II
1. Stack instruction	i. EI.
2. Machine instruction	ii. OUT addr.
3. Data transfer Instruction	iii. POP PSW.
	iv. PUSH rp.

The correct match is:

A) 1-iv,iii, 2-i; 3-ii.

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

C) 1-i,iv; 2-ii, 3-iii.

D) 1-iv; 2-ii; 3-iii,i.

97. A rotary converter generally

A) Combines the functions of an induction motor and DC generator.

B) Has a set of slip rings at both ends.

C) Has one armature and two fields.

D) Is a synchronous motor and a DC generator.

98. If [BX] = 0050H, [DS]=2000H, [00500H]=80H, [20050H]=08H, [CX]=5000H, then after MOV CL,[BX] instruction is executed the contents of CX will be _____.

A) 0050H.

B) 5008H.

C) 5080H.

D) 0008H.

99. A 200 c.p. lamp is hung 4 metres above the centre of a circular area of 5 metre diameter. Find the illumination at the periphery of the area.

A) 7.624Lux at edge and 6.46 Lux at vertical.

B) 76.24Lux at edge and 64.6 Lux at vertical.

C) 0.7624Lux at edge and 0.646Lux at vertical.

D) Both are 7.624Lux only.

100. Consider the following statements :

Assertion (A) : A building measuring 30m×20m is to be floodlit on the front side with a brightness of 25 Lumen/Sq.m. Coefficient of reflection of the building surface is 0.25. Lamps of 500W having lumens output of 8000 each are used. The beam factor is 0.6 waste light factor is 1.2 and the maintenance factor is 0.75.

Reason (R) : The number of lamps required is 20 Lamps.

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.

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

Booklet Serial No. **232249**

Test Booklet Series

A

TEST BOOKLET
COMPUTER ENGINEERING
LECTURER - I
Written Test - 2024
(73)

Time Allowed: Two Hours *Maximum Marks: 100*

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 **100** 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

1. What will be the output of the following code?

```
main ()
{
printf(" %d%o,%x", 72,72,72);
}
```

The correct answer is:

A) 72 110 48
B) 72 72 72
C) 72 49 112
D) 72 112 49

2. Identify the output of the following code

```
main (
{
int x;
double cr;
printf("%d",sizeof(x));
printf("%d",sizeof(cr));
}
```

The correct answer is:

A) 2,8
B) 1,8
C) 2,4
D) 1,4

3. Identify the output

```
main()
{
printf(aa\n\n nn\n");
printf("hh/n/n/n  nn/n");
}
```

The correct output is:

A) aa
nn
hh/n/n nn

B) aa nn
hh
n
n
nn

C) Aa
hh

D) aa
nn
hh nn

4. Find the output for the following code.

```
main()
{
int x = 3, y = 4, z = 3;
printf("ans=%d", z>=y&&y>=x?1:0);
}
```

The correct output is:

A) 1
B) 0
C) 1 0
D) Garbage Value.

5. Find the output.

```
main ()
{
int i =40, j=45;
if(j-i)%10
printf("%d",j);
else
printf("%d",i);
}
```

The correct output is:

A) 45
B) 40
C) 5
D) Error.

6. Find the output.

```
main()
{
Int i = 4;
for(;i+2;)
printf("%d",i);
}
```

The correct output is:

A) 1,2,3,...
B) 4,6,...
C) 1,2,3,4,5,...
D) Error.

7. Find the output

```
main()
{
int i = 40;
float x;
x=check(i);
printf("X=%f",x);
}
check(ch)
int ch;
{
ch>=45?return(3.74):return(7.81);
}
```

The correct output is:

A) X = 3.74.
B) X=3.
C) X=7.81.
D) X=7.

8. Find the output

```
main()
{
 A()
{
 A()
   {
     printf("Hai\n");
   }
  printf("Hello\n");
}
printf("Welcome\n");
}
```

The correct output is:

A) Hai
B) Hai Hello
C) Error.
D) Hai Hello Welcome

9. The default storage class of a variable declared inside a function is

A) Global.

B) Automatic.

C) Register.

D) Static.

10. Find the output.

```
# define ST() (X*X)
main()
{
int a;
a=27%ST(2);
printf("%d",a);
}
```

The correct output is:

A) 1

B) 3

C) 27

D) Error.

11. The binding of data and function in a class is

A) Inheritance.

B) Encapsulation.

C) Data Binding.

D) Overloading.

12. Which of the following statement/s is/are INCORRECT?

Statement 1 : Precedence and associativity of operator can be changed.

Statement 2 : Only existing operators can be overloaded.

Statement 3 : Overloaded operators can have default arguments

Statement 4 : Binary operators can be overloaded.

The correct answer is:

A) Only Statement 1

B) Statement 1 and Statement 2.

C) Only Statement 3.

D) Statement 1 and Statement 3.

13. Identify the operator that can be overloaded.

A) Increment operator (++).

B) Scope Resolution Operator (::).

C) Sizeof().

D) Conditional Operator (?:).

14. The advantages of Inheritance are.

A) Renewability.

B) Transitivity.

C) Commutative.

D) Overloading.

15. The number of bytes occupied by a class without any declaration in it is

A) 2 bytes.

B) 4 bytes.

C) 1 byte.

D) 0 byte.

16. The private members of a class can be inherited using.

A) Private.

B) Protected.

C) Public.

D) Inline.

17. Pick the irrelevant characteristics of destructor.

I. Destructors have no return type.

II. Destructors can be inherited.

III. Destructor can be overloaded.

IV. Compiler - generated default destructors.

The correct answer is:

A) Only I.

B) Only IV.

C) II and III.

D) I and IV.

18. Identify the method which waits for the thread to get terminated is

A) Alive().

B) join().

C) super().

D) run().

19. AWT in Java stands for

A) Applet Window Toolkit.

B) Abstract Window Toolkit.

C) Applet Window Toolbox.

D) Apple Window Tool.

20. The C language code can be integrated with Java using.

A) Java Native Interface.

B) Java Native Code.

C) Java Native Method.

D) Java Native Class.

21. The resources used by the class can be freed before destruction is supported through

A) Final().

B) Finally().

C) Finalize().

D) Destructor.

22. The Mouse Events can be handled using.

A) Action Listener.

B) Mouse Listener.

C) Mouse Method.

D) Event Listener.

23. Discovering the rules and pattern from the database is

I. Data Analytics.

II. Data Caching.

III. Data Mining.

IV. Predictive Model.

The correct answer is:

A) I, II, III.

B) II, III.

C) I, III, IV.

D) II, IV.

24. The database shall be accessed under which of the following circumstances?

I. Online Transaction Processing

II. Mobile Banking.

III. Data Engineering.

IV. E-commerce.

The correct answer is:

A) I and II.

B) II and III.

C) Only IV.

D) I, II and IV.

25. Redundancy in database schema shall be eliminated using.

A) Serialization.

B) Boyce - Codd Normal Form.

C) Closure.

D) Canonical Cover.

26. Which of the following options predicts the functional dependencies?

I. Reflexivity Rule.

II. Augmentation Rule.

III. Transitivity Rule.

IV. Transform Rule.

The correct answer is:

A) I, II, III.

B) II, III, IV.

C) III and IV.

D) I and IV.

27. The data in a database shall be hidden and the remaining data shall be displayed to the user using a technique called

A) Integrity.

B) Assertions.

C) Trigger.

D) Views.

28. The errors detected during the execution of the transaction can be recovered by

A) Commit Work.

B) Rollback Work.

C) Constraints.

D) Check Clause.

29. Viewing database values in more than one table is achieved through.

A) Domain Constraints.

B) Referential Integrity.

C) Null Constraints.

D) Unique Key.

30. The level of abstraction in a database which supports for what data can be stored in a database is?

A) Physical Level.

B) Abstract Level.

C) Logical Level.

D) View Level.

31. The widely used data model for storing data is

A) Relational model.

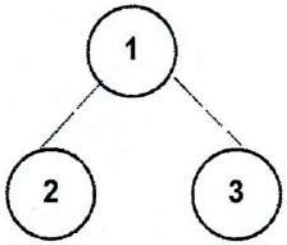
B) Entity - Relationship Model.

C) Network Model.

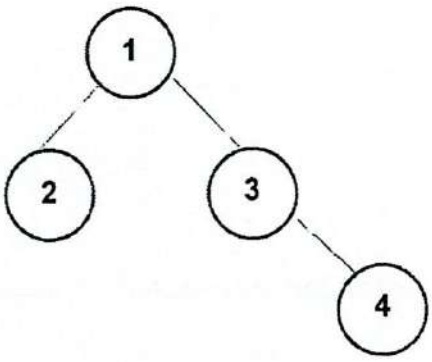
D) Hierarchical Model.

32. Which of the following is a skewed tree?

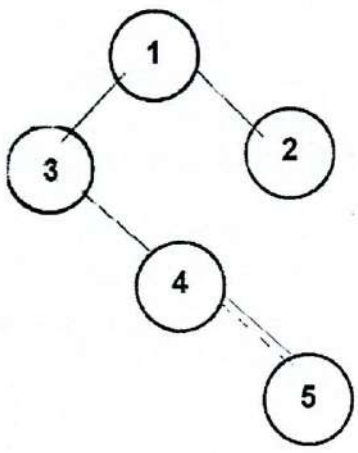
A)



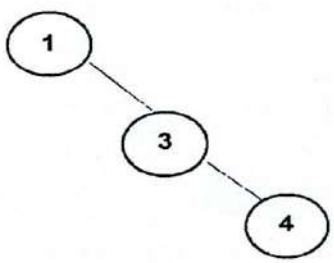
B)



C)



D)



33. The search tree where the height of the subtree differs by not more than one is called

A) Binary Tree.

B) Binary Search Tree.

C) AVL Tree.

D) Complete Binary Tree.

34. AVL balance tree rotations fall under which of the following categories?

I. Left to Left

II. Top to Bottom.

III. Right to Left.

IV. Bottom to Top.

The correct answer is:

A) I and III.

B) II and IV.

C) II and III.

D) I and IV.

35. The priority queue can be implemented using.

A) Binary Tree.

B) AVL Tree.

C) Heap.

D) Graph.

36. An efficient alternative to the linked list data structure is

A) Stack.

B) Queue.

C) Binary Tree.

D) Spanning Tree.

37. The hierarchical relationship among the data can be represented through.

A) Graph.

B) Tree.

C) Stack.

D) Circular List.

38. Which of the following represents the key application area of the spanning tree?

I. Artificial Intelligence.

II. Database Management.

III. Statistical Analysis.

IV. Data Communication.

The correct answer is:

A) I and II.

B) I, II and III.

C) II and III.

D) II, III and IV.

39. Spanning tree cannot be effectively implemented using.

A) Matrices.

B) Expression Tree.

C) List.

D) Array.

40. A graph represented with the weighted edge is.

A) Network.

B) Tree.

C) Complete Binary Tree.

D) Height Balanced Tree.

41. Predict the user - defined types supported by SQL.

I. Different type.

II. Distinct type.

III. Structure type.

IV. Unstructured type.

The correct answer is:

A) I and II.

B) I and III.

C) II and IV.

D) II and III.

42. The problem of hashing algorithm which maps with a preoccupied address is

A) Collision.

B) Coincidence.

C) Indexing.

D) Contention

43. Identify the software engineering framework activities which cannot be executed in parallel.

A) Implementation.

B) Modelling.

C) Deployment.

D) Communication.

44. The process model where the test cases are developed parallelly in

I. Perspective Model.

II. V Model.

III. Agile Model.

IV. Specialised Process Model.

The correct answer is:

A) I

B) II and III.

C) II and IV.

D) IV.

45. Pick out the requirements which impact the architecture of a system.

A) Functional Requirements.

B) Non - Functional Requirements.

C) Domain Requirements.

D) Usability Requirements.

46. Identify the type of requirements which play a vital role in maintaining the characteristics of the system.

I. Product Requirements.

II. Non - Functional Requirements.

III. Functional Requirements.

IV. Environmental Requirements.

The correct answer is:

A) I, II, IV.

B) II, III, IV.

C) III, IV.

D) II, IV.

47. Identify the technique that enables to prediction of the syntactical error without compilation.

A) Testing.

B) Debugging.

C) Compilation.

D) Integrated Development Environment.

48. Which of the following ensures the quality of the software.

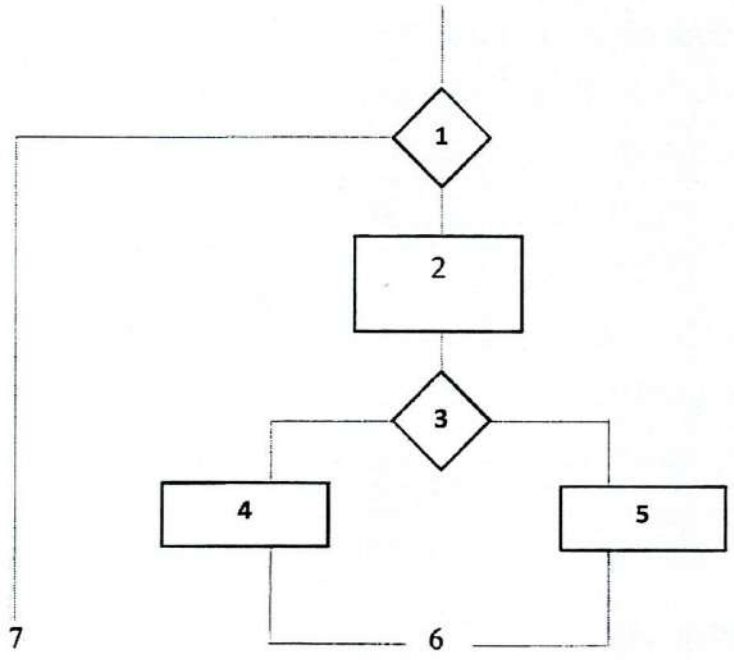
A) Planning.

B) Requirements Engineering.

C) Modelling.

D) Testing.

49. Determine the cyclomatic Complexity of the given flowchart.



Choose the correct option:

A) 1

B) 2

C) 3

D) 4

50. The incremental process model which also helps to decrease risk in software development is

I. Spiral Model.

II. Incremental and Spiral Model.

III. Concurrent Process Model.

IV. Prototype Model.

The correct options are:

A) Only II and IV.

B) Only I.

C) Only IV.

D) Only I, II, IV.

51. The algorithm which provides secure encryption to ensure authentication and integrity of the image is

A) Elliptic Curve Diffie Hellman Algorithm.

B) Elliptic Curve Digital Signature Algorithm.

C) Elliptic Curve Cryptography.

D) Hash - based Diffie Hellman Algorithm.

52. Identify the type of software tools that support the software engineering process.

I. Automated support tool.

II. Timely support tools.

III. Work products.

IV. CASE tools.

The correct options are:

A) Only I and II.

B) Only II.

C) Only III.

D) Only I and IV.

53. Identify the correct match of framework activities of software engineering with actions.

Software Engineering Activities	**Actions**
I. Planning	Analysis of Requirements
II. Communication	Stakeholder Discussion
III. Design	Software Module

The correct options are:

A) Only II and III.

B) Only I.

C) Only I and III.

D) Only II.

54. Which of the following application is not suitable for encryption?

A) Data Communication.

B) Audio Communication.

C) Password Storage.

D) Data Backup.

55. The type of attack which is difficult to detect is

A) Active attack.

B) Passive attack.

C) Intrusion.

D) Traffic Analysis.

56. Detect the correct match of social engineering activities with their type

	Social Engineering	**Attack**
A)	Website	Phishing.
B)	SaaS	Waterhole attack.
C)	Cyber Security	USB Baiting.
D)	Encryption	Warm hole.

57. The high number of email spam messages in an email inbox is an indication of

I. Intrusion.

II. Denial of Service Attack.

III. Brute Force Attack.

IV. Firewall.

The correct answer is:

A) I and II.

B) II and III.

C) IV.

D) III and IV.

58. Which of the following attack is mitigated by BotNet.

A) IPSec.

B) ICMP.

C) Zombie.

D) UDP.

59. Identify the metrics in an encryption algorithm which predicts the strength of encryption algorithm.

A) Processing Time.

B) Key Management.

C) Storage Requirement.

D) Access Control.

60. The hashing algorithm are better than message digest algorithm because

A) Reversible process.

B) Non reversible process.

C) Different hash value for the same input.

D) Same hash value.

61. The operating systems supports for inter process communication using.

I. Independent Process.

II. Synchronisation Process.

III. Cooperating Process.

IV. Sockets.

The correct answer is:

A) I and II.

B) II.

C) II and IV.

D) II and III.

62. Consider the following process with the CPU burst time. Find the average waiting time of the process using Shortest Job First. Scheduling.

Process	Burst Time
P1	4
P2	7
P3	6
P4	3

The average waiting time is:

A) 3.5

B) 4.5

C) 2.9

D) 5.7

63. Which of the following algorithms supports process scheduling in time - sharing systems?

A) Round Robin Scheduling.

B) Priority Scheduling.

C) First Come First Serve Scheduling.

D) Multilevel Scheduling.

64. In which of the following mode a process may not be pre - empted,

A) User Level Process.

B) Threads.

C) Foreground Process.

D) Kernel Process.

65. The operating system which supports credit - based scheduling is

A) Solaris.

B) Windows.

C) Linux.

D) Android.

66. Identify the correct options which enable the process synchronization.

I. Integer Value.

II. Pointer to Process Control Block.

III. Semaphores.

IV. Timestamp.

The correct answer is:

A) I, II and IV.

B) I, II and III.

C) II and IV.

D) III and IV.

67. Which of the following semaphores is used in mutual exclusion of multiprocessor system?

A) Busy Waiting.

B) Spin Clock.

C) Deadlock.

D) Blocking.

68. The programs whose size is larger than the physical memory can be executed using

A) Virtual Memory.

B) Random Access Memory.

C) Cache Memory.

D) Read Only Memory.

69. The technique that provides resource requirements for executing the process is

A) Isolation.

B) Deadlock Avoidance.

C) Deadlock Exclusion.

D) Resource Allocation.

70. When an operating system is in an unsafe state, it can be recovered with a resource allocation graph with

A) Claim Edge.

B) Request Edge.

C) Assignment Edge.

D) Mutual Inclusion.

71. Identify OSI layers which support the delivery of packets from the source node to the destination node across different networks.

I. Data Link Layer.

II. Transport Layer.

III. Network Layer.

IV. Presentation Layer.

The correct options are:

A) I

B) II and IV.

C) I and III.

D) IV.

72. The amount of data that can be transmitted from a source without overwhelming the destination is

A) Access Control.

B) Flow Control.

C) Error Control.

D) Message Control.

73. The 'n' represents the number of nodes.

The number of links needed for the mesh networks can be calculated by

A) n*n.

B) (n+1)/2.

C) n-(n*2).

D) n*(n-1)/2.

74. The type of communication technology service supported by the free space optics is

A) WMAN.

B) WLAN.

C) WPAN.

D) WWAN.

75. Predict the port used by HTTP protocol.

A) 19

B) 23

C) 25

D) 80

76. The type of service supported by UDP is

A) Connection Oriented Protocol.

B) Wireless Protocol.

C) MANET.

D) Connectionless Protocol.

77. Choose the correct service against the medium of communication supported by Bluetooth.

	Service	**Communication Support**
I.	Voice and Data	Infra - Red
II.	Voice	Radio Waves
III.	Data	Radio Waves.
IV.	Video Streaming	Infra - Red.

The correct answer is:

A) I and IV.

B) II and IV.

C) I and III.

D) II and III.

78. Find the class of the following IP address.

a. 225.10.14.87

b. 195.20.56.24

The classes of the given IP addresses are respectively:

A) Class B and Class C.

B) Class D and Class C.

C) Class A and Class B.

D) Class A and Class C.

79. The mobile ad hoc networks belong to which type of network,

A) Centralised wired network.

B) Centralised distributed network.

C) Decentralised Wireless network.

D) Centralised Wireless network.

80. An IP address in a block is given as 184.8.12.8. Find the first address and last address.

A) 184.8.0.0 and 184.8.255.255.

B) 184.0.0.0 and 184.8.255.255.

C) 184.0.0.0 and 184.255.255.255.

D) 184.8.0.0 and 184.0.255.255.

81. The web browser storing the content at the client machine is

A) HTTP caching.

B) MIME.

C) Schema.

D) Namespace.

82. Which of the following is the basic graphical web browser?

A) Mozilla.

B) Mosaic.

C) Netscape Navigator.

D) Internet Explorer.

83. Which of the following statements representing the functions of the browser are true,

Statement 1 : DNS converts name to IP address.

Statement 2 : Clients establish HTTP connection using IP address.

Statement 3 : HTTP requests are forwarded using UDP.

The correct statement/s is/are:

A) Only Statement 1.

B) Statement 2 and Statement 3.

C) Only Statement 3.

D) Statement 1 and Statement 2.

84. Browsers can remember already used information using a technique called

A) Caching.

B) Automatic Filling.

C) Navigation.

D) Exploring.

85. Using HTML, related web pages can be made accessible through.

A) Hyperlinking.

B) Frames.

C) Hypernet.

D) Hypermedia.

86. Identifier representing resources on the World Wide Web is

A) Uniform Resource Locator.

B) Uniform Resource Identifier.

C) Namespace Identifier.

D) Uniform Resource Name.

87. Graphics can be supported in mail using.

A) POP3.

B) SNMP.

C) SMTP.

D) MIME.

88. Forwarding of packets across different networks supporting different protocols are aided through.

A) Router.

B) Bridge.

C) Gateway.

D) Switch.

89. Which of the following protocols is used by a web browser for forwarding requests to a web server?

A) HTTP.

B) URI.

C) Stop and Wait.

D) IP.

90. The properties of the objects can be identified using.

A) Semantic Networks.

B) Inference Rule.

C) Beliefs.

D) Searching Methods.

91. Which of the following is the biggest problem in breadth - first search.

I. Time Management.

II. Memory Management.

III. Execution Time.

IV. Shallow node.

The correct options are:

A) I and II.

B) II and IV.

C) II.

D) III.

92. The representation of objects and identification of relation between the objects is carried out in.

A) Knowledge Engineering.

B) Model - based Reasoning.

C) Backward Chaining.

D) Inference Rule.

93. The type of logic inference used in backward chaining algorithm is

A) Logic Programming.

B) Facts.

C) Automated Reasoning.

D) Indexing.

94. Which algorithm uses the knowledge base to construct a dataflow network?

I. Rete Algorithm.

II. Forward - Chaining Algorithm.

III. Backward Chaining Algorithm.

IV. Incremental Forward - Chaining Algorithm.

The correct answer is:

A) I, II, IV.

B) I, II, III.

C) I, III, IV.

D) II, III, IV.

95. Matching the unifiers with the facts is called.

A) Pattern Mining.

B) Pattern Matching.

C) Renaming.

D) Predicting.

96. In knowledge representation, the categories of objects are represented in first - order logic as

A) Subjects and Predicates.

B) Inheritance.

C) Predicates and Objects.

D) Hierarchy.

97. Parsing of natural language is implemented using.

A) Computational Logic.

B) Table - Logic.

C) Prolog.

D) Robbins Algebra.

98. The disadvantage of the backward chaining algorithm is

I. Redundant Inferences.

II. Infinite Loops.

III. Negation.

IV. Inequality.

The correct answer is:

A) I and II.

B) I and III.

C) II and IV.

D) III and IV.

99. Dividing the subproblems into smaller subproblems and caching the solutions to reduce the recomputations is carried out in

I. Dynamic Programming.

II. Memoization.

III. Backward Chaining.

IV. Forward Chaining.

The correct options are:

A) I and II.

B) III and IV.

C) II and IV.

D) I and III.

100. The processing power of advanced data processing is enabled through.

I. Cloud.

II. IoT.

III. Edge.

IV. Machine Learning.

The correct options are:

A) I, II.

B) I, III.

C) I, III, IV.

D) II.

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Booklet Serial No. 230185

Test Booklet Series

A

TEST BOOKLET
ARCHITECT ASSISTANTSHIP
LECTURER - I
Written Test - 2024
(71)

Time Allowed: Two Hours ***Maximum Marks: 100***

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 **100** 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.

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1. It is determined by the shapes and interrelationships of the plane that form the boundaries of the volume.

   A) Point.

   B) Form.

   C) Volume.

   D) Axis.

2. Match the following.

   i. Axis.

   ii. Symmetry.

   iii. Hierarchy.

   iv. Rhythm.

   v. Datum.

   Descriptions :

   1. Continuity and Regularity.

   2. Recurring Patterns.

   3. A line between 2 points in space.

   4. Balanced distribution.

   5. Form or space based on its size, shape relative to other forms.

   Match the Options :

	i	ii	iii	iv	v
A)	5	4	1	2	3
B)	4	1	5	2	3
C)	1	2	3	4	5
D)	5	4	3	2	1

3. Bilateral Symmetry refers to

A) two or more axes that intersect at a central point.

B) Balanced arrangement of equivalent elements about a common axis.

C) Octagonal lines on both the ends.

D) None of these.

4. In Modular the basic grid consists of 113 cm,

A) 70 cm and 43 cm.

B) 90 cm and 23 cm.

C) 45 cm and 60 cm.

D) 15 cm and 20 cm.

5. Choose the correct answer

The > symbol indicates greater visual weightage :

i. Vertical > Horizontal > Neutral.

ii. Solid > Perforated.

iii. Height > Dark > Width.

iv. Projecting > Receding > Increasing.

The correct answer is:

A) i and ii.

B) ii and iii.

C) iii and iv.

D) i and iv.

6. The School of Thought believed that machines should be made subservent to the creative designers.

A) Chicago School of Thought.

B) Bauhaus School of Thought.

C) Le Corbusier School of Thought.

D) Louis Khan School of Thought.

7. The architecture style which was simple and utilitarian.

A) Cistercian.

B) Gothic.

C) Pre Independence style.

D) Islamic style.

8. The facade of Palazzo Rucellai.

A) Design overlays a grid of shallow pilasters and cornices in the classical manner.

B) Trapezoid shape defined by four buildings.

C) Triumphal arch motif both for its facade and interior.

D) Human figure related to a square and circle.

9. The book I Quattro Libri dell Architecture.

A) Palladio.

B) Daniele Barbaro.

C) Kerle.

D) Charles Barromeo.

10. Boat houses, Religious buildings and general buildings.

A) Scandinavian Architecture.

B) Italian Architecture.

C) Gothic Architecture.

D) Renaissance Architecture.

11. Thirteen storied highly enriched pyramidal Sikra found in

A) Madura.

B) Tanjore.

C) Conjeevaram.

D) Vellore.

12. Kufic means.

A) Lettering in the older style.

B) Geometric Figures.

C) Projecting bay window.

D) Carved work.

13. In Plan they resemble christian cathedral in having three aisles formed by two rows of piers.

A) Hindu Architecture.

B) Buddhist Architecture.

C) Roman Architecture.

D) Romanesque Architecture.

14. Match the following :

i. Acropolis.

ii. Agora.

iii. Annulet.

iv. Anta.

Descriptions :

1. Open air assembly or market.
2. Cities built on hills.
3. Pilaster terminating the side wall of a temple.
4. A small flat fillet encircling a column.

Match the option :

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

15. The Jami Masjid in Ahmedabad finished in

A) 1423 AD

B) 1523 AD

C) 1100 BC

D) 800 AD

16. Ajimez means.

A) Front of the house.

B) Tower Projecting from the walls.

C) Room containing fire place.

D) Pair of windows sharing a central column.

17. Match the following :

i. William Le Baron.

ii. Thomas Pritchard.

iii. Claude Nicolas Ledoux.

iv. Newtons Cenotaph.

Descriptions :

1. Louis Boulle.

2. River Inspector House.

3. Cast Iron Bridge.

4. Ten storey house insurance building.

Match the option :

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

18. Simple orthogonal facade were divided by the rhythm of repeated vertical avant corps and horizontal sill lines reflecting the spacing of the stell bearing structure

A) Marquette Building in Chicago.

B) Lombartzyde in Belgium.

C) National Bank, Rome.

D) River Inspector House.

19. Which statement is correct

i. Avoidance of symmetry in composition.

ii. Incorporating courtyard in design.

iii. Unity of spatial form and function with the structural system recognized as beauty and harmony in architecture.

iv. Separating the space with beams and columns.

Choose the correct options :

A) iii and iv

B) i and ii

C) i and iv

D) i and iii

20. Match the following :

i. Forms follows function.

ii. Less is more.

iii. Decoration is a crime.

iv. Avante garde.

Descriptions :

1 Functionalism.

2 Adolf Loos.

3 L.Sullivan.

4 Mies Van der Rohe.

Match the Option :

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

21. The assets which cannot be seen or touched but certainly can be felt or realised.

A) Intangible.

B) Tangible.

C) Liabilities.

D) Fixed.

22. Match the following :

		Descriptions.
i.	Crossed Cheque	1. Net Income.
ii.	Dishonouring	2. Tall talks.
iii.	Income Tax	3. Tangible Assets.
iv.	Solvency certificate	4. Insufficient Amount.
v.	Building	5. Two parallel Lines.

Match the Option :

	i	ii	iii	iv	v
A)	5	4	3	2	1
B)	4	3	2	1	5
C)	3	4	5	2	1
D)	1	2	3	4	5

23. Match the following :

		Descriptions
i.	Promoter	1. Senior Architect.
ii.	Assessor	2. Architects who have taken part in competition.
iii.	Brief	3. An individual or an organisation who holds the competition.
iv.	Competitors	4. Design Proposals submitted.
v.	Entries	5. A list of requirements.

Match the Options :

	i	ii	iii	iv	v
A)	1	2	3	4	5
B)	2	4	3	5	1
C)	2	4	1	5	3
D)	5	4	3	2	1

24. An exercise to find out different approaches to a certain aspect in an architectural or town planning problems.

A) Idea Competition.

B) Special Competition.

C) Open Competition.

D) Limited Competition.

25. Perjury refers to

A) Copying a signature.

B) Misrepresentation.

C) Telling a lie.

D) Criminal Act.

26. Kasha means.

A) Lands within urbanised area.

B) Agricultural Land.

C) Commercial Land.

D) OSR.

27. Which of the following is considered for contract document.

i. Copy of work order.

ii. Copy of Public Notice.

iii. Scrutiny report.

iv. Letter of offer.

The correct answer is:

A) i, ii and iv.

B) i, iii and iv.

C) ii, iii and iv.

D) i, ii and iii.

28. Retention percentage refers to

A) Contractor deposit 10% of the content amount as a security deposit to the owner amount.

B) Owner transferring 30% to the contractor.

C) Opening Joint account.

D) Guarantee signature.

29. Each of the parties shall appoint his own arbitrator who shall be a fellow member of the IIA.

A) Joint Arbitrator

B) Umpire.

C) Single Arbitrator

D) None of these.

30. Formula for sinking fund

A) $\frac{(1+P)n-1}{P}$.

B) $\frac{(1-P)n}{n}$

C) $\frac{n-P}{Q}$

D) None of these.

31. In Pre concrete piles, the usual mix of concrete is ____ with maximum size of aggregate equal to _____mm.

A) 1:2:4, 19

B) 1:3:6, 12

C) 2:4:6, 10

D) 1:1:2, 8

32. The essential feature of pneumatic caissons.

A) Compressed air is supplied to prevent water from entering.

B) Under water concreting, no reinforcement provided.

C) Well steining is built one straight line from the bottom to top.

D) Used for construction of foundations.

33. In order to reduce the overall depth of the floor bridging joists are cogged to the binders.

A) Single Joist Floor.

B) Double Joist Floor.

C) Framed Joist Floor.

D) Madras Terrace Roof.

34. Match the following

	Descriptions
i. Spread Footing	1. Covers the entire area beneath a structure and supports all the walls.
ii. Combined Footing	2. Spread load of wall or column.
iii. Stap Footing	3. Supports two or more columns.
iv. Raft Foundation	4. Independent footings of two column.

Match the Options :

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

35. Match the following :

			Descriptions
i.	External Door	1.	0.9m×2m
ii.	Internal Door	2.	0.7m×2m
iii.	Bathroom Door	3.	2.25m×2.25m
iv.	Garages for Cars	4.	1.0m×2m

Match the Options :

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

36. An activity oriented network diagram.

A) CPM.

B) PERT.

C) Hologram.

D) Barcart.

37. A Connecting link for control purposes of an activity.

A) Event.

B) Activity.

C) Dual Role Event.

D) Dummy.

38. Crash Cost is the ____ required to complete the activity in Normal time.

A) Direct cost.

B) In direct cost.

C) Average.

D) Normal cost.

39. The amount of time the task can slip without delaying the project finish date.

A) Float.

B) Free Float.

C) Interfering Float.

D) Total Float.

40. ____ is the allocation of resources.

A) Planning.

B) Controlling.

C) Scheduling.

D) Execution.

41. Match the following :

		Descriptions	
i.	Density of water	1.	sq.m/sec
ii.	Specific weight of water	2.	kg-f/m
iii.	Surface tension	3.	kg/cub.m.
iv.	Viscosity	4.	w

Match the Options :

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

42. The depth of the socket is usually.

A) 1.5 times the diameter of the pipe.

B) 6 times the radius.

C) 2 times the length.

D) 6 times the width.

43. Which statement is correct.

Valves are introduced in the pipelines.

i. To lower the rate of flow of the liquid.

ii. To stop the flow of liquid altogether.

iii. To regulate the pressure in the pipe lines.

iv. Used for commercial purpose only

Choose the correct option :

A) ii and iii.

B) i and iv.

C) iii and iv.

D) i and iii.

44. _____ is used to provide hose connections outside the buildings.

A) Bibcock

B) Ball cock.

C) Spent Valve.

D) Sill cock.

45. Calculate the diameter of vertical stack to discharge 4 lps when flowing full.

A) 100 mm

B) 200 mm

C) 150 mm

D) 300 mm

46. The lintel band.

A) Improves stability of foundation soil.

B) Uneven settlement of foundation soil.

C) Induced water flow.

D) Protect the wall from sliding.

47. Match the following :

i. Lintel band.

ii. Roof band.

iii. Gable.

iv. Masonry band.

Descriptions :

1. Continuous with roof band at the eaves level.
2. Perpendicular walls it is necessary to make a slopping point.
3. A partition wall will improve their stability during earthquake underneath.
4. Not to be provided reinforced concrete resting on bearing walls.

Match the Options :

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

48. In Most buildings, the geometric distortion of the slab is negligible in the horizontal plane, this behaviour is _____.

A) Rigid diaphragm action.

B) Gravity loading.

C) RC frame.

D) Earthquake loading.

49. During an earthquake of given intensity, the magnitude of forces induced in a structure mainly depends on.

i. Damping.

ii. Irregularity.

iii. Energy dissipation capacity.

iv. Building section.

The correct answer is :

A) i and iii

B) i and iv

C) iii and iv

D) ii and iv

50. In unreinforced masonry buildings, the cross section area of the masonry wall reduces at the _____.

A) Joints.

B) Partitions.

C) Openings.

D) Basement.

51. Who is best remembered for his landscape architecture, from New York's Central Park to Boston's Emerald Necklace to Stanford University's campus?

A) Robert Burl Marx.

B) Ian McHarg.

C) F.L. Olmsted.

D) I.M.Pie.

52. _____ is a horticultural technique where tissues of plants are joined so as to continue their growth together.

A) Cutting.

B) Grafting.

C) Mulching.

D) Transplantation.

53. What is the recommended maximum slope percentage for streets and drives?

A) 5%

B) 10%

C) 8%

D) 15%

54. _____ provides a low carpet of dense growth ranging in height from few inches to several feet.

A) Ground cover.

B) Shrub.

C) Tree

D) Creeper.

55. The formula to find slope percentage is _____.

A) Gradient percent = (Run/Rise) ×100.

B) Gradient percent = (Horizontal distance/Vertical distance)×100.

C) Gradient percent = (Vertical distance/Horizontal distance)×100.

D) Gradient percent = (Vertical distance × Horizontal distance)/100

56. _____ are the strategic foci into which the observer can enter, typically either junctions of paths, or concentrations of some characteristic.

A) Landmarks.

B) Edges.

C) Districts.

D) Nodes.

57. In topographic contour maps, which feature is indicated by a continuous line connecting points of equal elevation?

A) Ridge line.

B) Steep slope line.

C) Valley line.

D) Convex slope line.

58. A function in which man expells less energy, like simply enjoying the view, relaxing, seeing the exhibition, listening music is called a _____ function.

A) Active.

B) Passive.

C) Formal.

D) Informal.

59. Which of the following trees are suitable for highways?

A) Neem.

B) Asparagus.

C) Rose.

D) Raphis excelsa.

60. _____ is a beautiful flowering plant having chocolate brown cross on every leaf

A) Bird of paradise.

B) Cactus.

C) Lemon grass.

D) Begonia masonian.

61. The term ITCZ refers to

A) Inter Tropical Convergence Zone.

B) Intra Tropical Convergence Zone.

C) Indian Topographical Climate Zone.

D) Island Temperature Climate Zone.

62. Stevenson screen _____.

A) Dry bulb.

B) Vapour Pressure.

C) Air humidity.

D) Heat flows.

63. Match the following :

		Descriptions
i.	Air temperature	1. 10-55%
ii.	Precipitation.	2. 1700-2500 cd/cub.m
iii.	Humidity	3. 43 deg - 49 deg max.
iv.	Sky conditions.	4. 50-155 mm per annum.

Match the options :

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

64. The latent heat evaporation at normal temperature is around _____.

A) 3500 KJ/kg of water

B) 2400 KJ/kg of water

C) 1500 KJ/kg of water

D) 4500 KJ/kg of water

65. The stack pressure can be calculated from the equation

A) $Ps = 0.041 \times h \times €T$

B) $Ps = 0.0042 \times h \times \Delta T$

C) $Ps = 0.001 \times h \times Q$.

D) None of these.

66. Estimated embodied energy of concrete and glass are (in mega joule/kg)

A) 0.9 and 2.4.

B) 6.9 and 4.2

C) 1.9 and 12.7.

D) 0.7 and 2.4.

67. It is covered with a thin foil of blackened nickel which has a high absorptivity in the short wavelengths solar spectrum but a low emissivity in the long wavelength infra - red spectrum.

A) Trombe Wall.

B) Boiler.

C) Air cooler.

D) Photovoltaic.

68. The term Xeriscaping refers to

A) To reduce landscape water demand.

B) Stored rainwater used during emergency.

C) Maintaining water purifying system.

D) Recycling water.

69. Match the following :

			Descriptions
i.	Green guard	1.	Efficiency requirement.
ii.	Eco Labelling	2.	Low Emitting Products.
iii.	Green seal	3.	Determine eligibility.
iv.	Energy Star	4.	Commercial products.

Match the Options :

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

70. The Compact Fluorescent bulb is

i. Easy and inexpensive retrofit.

ii. Bounce light off.

iii. Captures natural light to minimise artificial light.

iv. Uses 66% less energy.

The correct answer is:

A) iii and iv.

B) i and iv.

C) ii and iv.

D) i and ii.

71. Which of the following are considered as better solution for an economical solution for the shelter for villages.

i. Social and Religious Needs.

ii. Profession of a family.

iii. Circular planning of a village.

iv. 50% male population.

Tick the correct answer:

A) i and ii.

B) only iii.

C) ii and iv.

D) only i.

72. Match the following :

			Descriptions
i.	Physical condition	1.	Cost of development
ii.	Economic factors	2.	Health hazards.
iii.	Legal Implications	3.	Topography.
iv.	Social and Community	4.	Easement.

Match the Option :

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

73. For a neighbourhood unit requires 160 acres of land for

A) 10,000 - 15,000 population.

B) 20,000 - 50,000 population.

C) 5,000 - 6,000 population.

D) 8,000 - 9,000 population.

74. A system directs flow to common center where various common activities exist.

A) Curvilinear.

B) Grid.

C) Radial.

D) Linear.

75. In Egyptian town planning the approach roads on _____ pattern.

A) Circular.

B) Grid iron.

C) Radial.

D) Straight.

76. _____ introduced the principle of straight and wide streets and made provisions for the proper grouping of dwellings and also paid special attention to the combination of difference parts of a town in a harmonious whole of all it centered round the market place.

A) Hippodamus of Milteves.

B) Alexandria.

C) Constantinople.

D) William Penn.

77. Which statement is true ?

i. In Padmaka, the plan was practised for building of the town with fortress all round.

ii. In Swastika, plan the site may be either square or rectangular but not triangular or circular.

iii. In Swatika, the main roads are much wider compared to other patterns.

iv. The main streets are narrow in karmuka plan.

The correct answer is:

A) i and iii.

B) ii and iii.

C) i and iv.

D) i and ii.

78. Which of the following statement is correct.

Sjoberg's theory involved :

i. Divided the world into Industrial and Preindustrial cities.

ii. Fisheries are considered more important.

iii. Served as commercial centres supporting many business and factories.

iv. Industrial cities predominant in the modernised nations of western Europe and America.

The correct answer is:

A) i, ii and iii.

B) i, iii and iv.

C) ii, iii and iv.

D) All of the above.

79. Which one of the following is the most crucial factor for sustainable development in Indira Gandhi Canal Command area.

A) Agricultural Development.

B) Eco Development.

C) Transport Development.

D) Colonisation of land.

80. Regional Planning relates to

A) Development of various sectors of economy.

B) Area specific approach of development.

C) Area differences in transportation network.

D) Development of rural areas.

81. Which of the following best describes the main differences between traditional comprehensive planning and policy planning, according to the provided text?

A) **Scope :** Policy planning focuses on general, broad issues, whereas comprehensive planning addresses specific problems or opportunities.

B) **Time horizon :** Policy planning usually takes a long - term perspective, often looking 20 years into the future, while comprehensive planning is typically more short - term.

C) **Product :** Comprehensive planners produce documents like memos and draft legislation, while policy planners create specific regulations such as those for taxicabs or airports.

D) **Client :** Policy planning is often commissioned by private companies or banks, whereas comprehensive planning is mainly for the public interest and involves elected officials and government bodies.

82. Match the steps in the policy analysis process with their correct descriptions as depicted in the provided text :

i. Define, verify, and detail the problem.

ii. Establish evaluation criteria.

iii. Identify alternative policies.

iv. Evaluate alternative policies.

v. Display and distinguish among alternatives.

vi. Monitor the implemented policy.

Descriptions :

1. Quantifying the problem with numbers to test its size and significance.

2. Using criteria to assess and compare the potential outcomes of each alternative.

3. Describing a problem in detail, often involving breaking it down into smaller components.

4. Gathering data and feedback to ensure the policy's effectiveness after implementation.

5. Setting standards and benchmarks that will be used to measure the success of different policies.

6. Listing possible solutions that could address the defined problem.

Choose the correct option:

	i	ii	iii	iv	v	vi
A)	3	5	6	2	1	4
B)	1	5	2	6	4	3
C)	1	5	6	2	3	4
D)	3	6	5	2	1	4

83. What is the primary function of planned unit development?

A) To enhance public transportation systems.

B) To create large commercial centres.

C) To control and coordinate the development of residential and commercial areas.

D) To increase the height of buildings in urban areas.

84. What is one of the criticisms of the traditional zoning approach in urban development?

A) It allows for too much flexibility in building heights.

B) It does not provide enough space for commercial activities.

C) It fails to consider the integration of different land uses.

D) It encourages the demolition of historical buildings.

85. What is the primary purpose of the Trip Generation Model in transportation modelling?

A) To estimate the location of trips within a city.

B) To determine the number of trips generated by different land uses.

C) To analyse the efficiency of public transportation systems.

D) To design various cul-de-sac layouts for residential areas.

86. Which model in 'transportation modelling' is used to estimate which mode of transportation will be used for a trip?

A) Trip Generation Model.

B) Trip Distribution Model.

C) Modal - Split Model.

D) Traffic - Assignment Model.

87. Match the types of bonds in Column A with their descriptions in Column B.

Column - A

i. Zero coupon bonds

ii. Variable rate bonds.

iii. Put option bonds.

iv. Bonds with warrants

Column - B

Descriptions :

1. These bonds carry an interest rate that "floats" with market interest rates, protecting investors from unfavourable rates.

2. These bonds sell at a deep discount from their maturity value and do not make annual interest payments.

3. These bonds give investors the right to redeem the issue at a specified price before maturity.

4. These bonds allow investors to purchase additional bonds at a specified interest rate within a defined time period.

Match the Options:

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

88. Designers of advertisements, window displays, and road signs utilize their knowledge of which two perceptual processes to attract and hold people's attention?

A) Visual grouping and visual segregation.

B) Figure - ground relationship and colour contrast.

C) Proximity and similarity principles.

D) Symbolic representation and narrative integration.

89. What are some potential problems associated with improperly designed cul - de -sac streets?

A) Increased through traffic and noise pollution.

B) Traffic congestion, water supply issues, and inadequate emergency access.

C) Limited privacy and high vehicular traffic.

D) Overcrowded pedestrian walkways and lack of parking spaces.

90. What are the primary factors that should influence neighbourhood planning?

A) Aesthetic appeal and architectural design.

B) Proximity and convenience to daily activities and services.

C) Economic development and industrial growth.

D) Population density and urban expansion.

91. The Renaissance facade presents a public face to a square

A) S. Maria Navella

B) Uffizi Palace

C) Piazza San Marco

D) Peyrissac Residence

92. Match the following:

i) Kevin Lynch

ii) N.John Habaken

iii) Jane Jacobs

iv) Christopher Alexander

Descriptions:

1) A city is not a tree

2) The Death and life of Great cities

3) The image of the city

4) An alternative to mass housing

Match the Options:

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

93. A Vehicular Passage way leading through a building or screen wall into an interior courtyard.

A) Porte Cochene

B) Postern

C) Carriage Porch

D) Portal

94. An architect concerned with both the metaphysical and Phenomenological connection between architecture and its location

A) Steven Holl

B) Frank O Gehry

C) Itsuko hasegawa

D) Eric Owen moss

95. Match the following:

i) Tombs

ii) Great Hypostyle Hall

iii) Temple of Jehovah

iv) Tholos of Atreus

Descriptions:

1) Jewish Architecture

2) Mycenae

3) Eqyptian Architecture

4) Mastabas

Match the Options:

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

96. Mechanical Ventilation systems constantly draw in outside air which presumable contains fewer pollutants and less water vapour.

A) Dehumidification

B) Filtration

C) Conditioning of incoming air

D) Pressurization

97. A Calculation of all the energy that is used to produce a material or product including mixing, manufacturing and transport

A) Operational Energy

B) Embodied Energy

C) Material Calculation

D) Absorption Coefficient

98. The intensity of radiation reaching the upper surface of the atmosphere is taken as

A) Solar constant

B) Ultra violet

C) Infrared

D) Short infra red

99. Coriolis Force refers to

A) Slippage at the boundary layer

B) High Barametric Pressure

C) Polar Winds

D) Influence of Topography

100. The science of obtaining reliable information about the properties of surfaces and objects without physical contact with the objects and of measuring and interpreting this information.

A) Photogrammetry

B) Aerial Triangulation

C) Sensitometry

D) Remote Sensing