

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

**COMBINED COMPETITIVE (PRELIMINARY) EXAMINATION, 2013**

Serial No.

**BOTANY**  
**Code No. 03**



*Time Allowed : Two Hours*

*Maximum Marks : 300*

**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. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C OR D** AS THE CASE MAY BE IN THE APPROPRIATE PLACE IN THE RESPONSE SHEET.
3. You have to enter your Roll Number on this Test Booklet in the Box provided alongside.  
*DO NOT write anything else on the Test Booklet.*
4. This Booklet contains 120 items (questions). Each item comprises *four* responses (answers). You will select *one* response which you want to mark on the 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. In case you find any discrepancy in this test booklet in any question(s) or the Responses, a written representation explaining the details of such alleged discrepancy, be submitted within three days, indicating the Question No(s) and the Test Booklet Series, in which the discrepancy is alleged. Representation not received within time shall not be entertained at all.
6. You have to mark all your responses **ONLY** on the separate Response Sheet provided. *See directions in the Response Sheet.*
7. All items carry equal marks. Attempt **ALL** items. Your total marks will depend only on the number of correct responses marked by you in the Response Sheet.
8. Before you proceed to mark in the Response Sheet the response to various items in the Test Booklet, you have to fill in some particulars in the Response Sheet as per instructions sent to you with your Admit Card and Instructions.
9. While writing Centre, Subject and Roll No. on the top of the Response Sheet in appropriate boxes use **“ONLY BALL POINT PEN”**.
10. 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 Response Sheet. You are permitted to take away with you the Test Booklet.

Your Roll No.

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## ROUGH WORK

1. The proponent of chemisynthetic hypothesis concerning the origin of life is :  
 (A) Haldane (B) Oparin  
 (C) Darwin (D) Miller
2. Chiasmata formation takes place in this stage :  
 (A) Leptotene (B) Zygotene  
 (C) Pachytene (D) Diplotene
3. Base pair replacement involving the substitution of adenine by guanine is :  
 (A) Transition (B) Transversion  
 (C) Translation (D) Transposition
4. The smallest genetic unit that can undergo crossing over is :  
 (A) Cistron (B) Muton  
 (C) Recon (D) Exon
5. The cell organelle which plays an important role in 'Cell plate' formation during cell division is :  
 (A) Mitochondria (B) Golgi bodies  
 (C) Lysosomes (D) Amyloplasts
6. The studies conducted on 'Evening Primrose' led to the establishment of this theory :  
 (A) Theory of inheritance of acquired characters  
 (B) Natural Selection Theory  
 (C) Mutation Theory  
 (D) Neo-Lamarckism
7. The chemical employed to induce Euploidy is :  
 (A) Methyl methane sulfonate (B) Colchicine  
 (C) Polyvinyl pyrrolidone (D) Polyoxyethylene
8. In which of the following phase of cell cycle, DNA replication takes place ?  
 (A) G<sub>1</sub> phase (B) G<sub>2</sub> phase  
 (C) S phase (D) M phase
9. Which of the following is indicative of the term 'Alburnum' ?  
 (A) Spring wood (B) Autumn wood  
 (C) Heart wood (D) Sap wood
10. Organelle without membrane envelope is :  
 (A) Nucleolus (B) Peroxisome  
 (C) Glyoxysome (D) Vacuole

11. Commercial bread wheat is :  
 (A) Autohexaploid (B) Allohexaploid  
 (C) Autotetraploid (D) Allotetraploid
12. The shape of metacentric chromosome is :  
 (A) Rod shape (B) J-shape  
 (C) V-shape (D) Z-shape
13.  $2n - 2$  genomic formula refers to :  
 (A) Monosomy (B) Nullsomy  
 (C) Trisomy (D) Tetrasomy
14. Floridean starch is the reserve food material in :  
 (A) *Laminaria* (B) *Polysiphonia*  
 (C) *Chara* (D) *Nostoc*
15. An example to centric diatoms is :  
 (A) *Cyclotella* (B) *Rhabdonema*  
 (C) *Gamphonema* (D) *Navicula*
16. The chief source of alginic acid is :  
 (A) *Chondrus* (B) *Gelidium*  
 (C) *Vaucheria* (D) *Ascophyllum*
17. Mucopolypeptides are the cell wall components in :  
 (A) Rhodophyceae (B) Cyanophyceae  
 (C) Xanthophyceae (D) Bacillariophyceae
18. Meiosis is gametogenic in :  
 (A) *Ectocarpus* (B) *Cladophora*  
 (C) *Sargassum* (D) *Batrachospermum*
19. In the life cycle of *Puccinia graminis*, which of the following stage occurs on Barbery plant ?  
 (A) Aecial (B) Basidial  
 (C) Telial (D) Uredinal
20. A saucer shaped mycelial mat with short and closely packed conidiophores is referred to as :  
 (A) Rhizomorph (B) Acervulus  
 (C) Stromata (D) Sclerotia
21. Clamp connections are the characteristic feature of :  
 (A) Zygomycotina (B) Ascomycotina  
 (C) Basidiomycotina (D) Deuteromycotina

22. The shape of Rhabdo virus is :  
(A) Rod (B) Polyhedral  
(C) Tadpole (D) Bullet
23. *Rhodospirillum* is an example to :  
(A) Photoautotroph (B) Chemoautotroph  
(C) Photoheterotroph (D) Chemoheterotroph
24. Which of the following is a viroid disease ?  
(A) Potato spindle (B) Rice dwarf  
(C) Tobacco necrosis (D) Blue tongue
25. *Streptomyces fradiae* is the source for :  
(A) Kanomycin (B) Polymixin-B  
(C) Neomycin (D) Bacitracin
26. Construction of first recombinant DNA using plasmid of *Salmonella typhimurium* was conducted by :  
(A) Werner Arber and Nathans (B) Boliver and Rodriguez  
(C) Kornberg and Smith (D) Cohen and Boyer
27. Which of the following is not a vegetative propagule in lichens ?  
(A) Isidia (B) Soredia  
(C) Cyphella (D) Cephalodia
28. Peat moss refers to :  
(A) *Pellia* (B) *Porella*  
(C) *Funaria* (D) *Sphagnum*
29. Both columella and archesporium originate from endothecium in :  
(A) *Riccia* (B) *Marchantia*  
(C) *Anthoceros* (D) *Funaria*
30. According to 'Antithetic Theory', the following algae by progressive elaboration interpolated as sporophyte in the life cycle of bryophytes :  
(A) *Cladophora* (B) *Coleochaeta*  
(C) *Caulerpa* (D) *Chara*
31. Cretaceous period belongs to this era :  
(A) Cenozoic (B) Paleozoic  
(C) Mesozoic (D) Archeozoic

32. A fossilized form with mineral impregnated plant parts exhibiting cellular details is :  
 (A) Impression (B) Compression  
 (C) Cast (D) Petrification
33. Carrot shaped prothallus can be seen in :  
 (A) *Lycopodium complanatum* (B) *Lycopodium cernuum*  
 (C) *Lycopodium phlegmaria* (D) *Lycopodium inundatum*
34. Peltate sporangiophores are found in :  
 (A) *Selaginella* (B) *Equisetum*  
 (C) *Marsilea* (D) *Isoetes*
35. A Protostele with parallel xylem plates having phloem in between is called as :  
 (A) Haplostele (B) Actinostele  
 (C) Plectostele (D) Siphonostele
36. The development of embryo sac in Gnetum is :  
 (A) Monosporic (B) Bisporic  
 (C) Trisporic (D) Tetrasporic
37. Which of the following is haploid ?  
 (A) Bract scale (B) Ovuliferous scale  
 (C) Megaspore (D) Ovule
38. A species of the following genera is the source for *Canada* balsam :  
 (A) *Abies* (B) *Agathis*  
 (C) *Cedrus* (D) *Podocarpus*
39. Which of the following components of phloem are dead cells ?  
 (A) Sieve elements (B) Phloem fibres  
 (C) Companion cells (D) Phloem parenchyma
40. The development of sporophyte from any gametophytic cell without the union of gametes is called as :  
 (A) Apogamy (B) Apospory  
 (C) Autogamy (D) Apomixis
41. The ovules of gamopetalae are :  
 (A) Ategmic (B) Unitegmic  
 (C) Tritegmic (D) Bitegmic
42. The precursor of sporoporellin is :  
 (A) Tannin (B) Lignin  
 (C) Carotenoid (D) Protein

43. 'Polyad' condition of pollen grains is found in :  
 (A) Grass (B) *Hibiscus*  
 (C) *Tribulus* (D) *Accacia*
44. Ruminant endosperm is seen in :  
 (A) *Thumbergia* (B) *Myristica*  
 (C) *Barleria* (D) *Ricinus*
45. 'Syngamy' was first described by :  
 (A) Strasburger (B) Nawaschin  
 (C) Maheshwari (D) Bhatnagar
46. The ovule in which funiculus is at right angle to the nucellus and integuments is :  
 (A) Hemitropous (B) Orthotropous  
 (C) Anatropous (D) Campylotropous
47. Tunica-Carpus theory was proposed by :  
 (A) Nageli (B) Hanstein  
 (C) Schmidt (D) Schuepp
48. Astrosclereids are found in :  
 (A) Petiole of *Nymphaea* (B) Leaves of *Olea*  
 (C) Fruit of *Pyrus* (D) Seed coat of bean
49. Cork cambium is the alternate name to :  
 (A) Phellum (B) Phelloderm  
 (C) Phellogen (D) Periderm
50. Anomocytic type of stomata are present in :  
 (A) Commelinaceae (B) Ranunculaceae  
 (C) Rubiaceae (D) Brassicaceae
51. An example to partial stem parasite is :  
 (A) *Loranthus* (B) *Cuscuta*  
 (C) *Striga* (D) *Orobanche*
52. Polyarch condition is the characteristic feature of :  
 (A) Dicot stem (B) Dicot root  
 (C) Monocot stem (D) Monocot root
53. Schizogenous cavities are found in :  
 (A) Rutaceae (B) Myrtaceae  
 (C) Apiaceae (D) Solanaceae

54. The first International Botanical Congress was held at :  
 (A) London (B) Paris  
 (C) Leningrad (D) Vienna
55. Obdiplostaminous condition is the characteristic feature of :  
 (A) Caryophyllaceae (B) Asclepiadaceae  
 (C) Myrtaceae (D) Apocyanaceae
56. National Botanical Garden is located in :  
 (A) Kolkata (B) Dehradun  
 (C) Lucknow (D) Delhi
57. Which of the following is phylogenetically advanced feature ?  
 (A) Spirally arranged floral parts (B) Twisted corolla  
 (C) Caryopsis fruit (D) Umbel inflorescence
58. Superficial placentation is the diagnostic feature of the following family :  
 (A) Nymphaeaceae (B) Apiaceae  
 (C) Acanthaceae (D) Liliaceae
59. The specimen selected to serve as nomenclatural type when all the original material is lost is called as :  
 (A) Paratype (B) Isotype  
 (C) Syntype (D) Neotype
60. The persistent nucellus in *Piper* is referred to as :  
 (A) Pericarp (B) Perisperm  
 (C) Coruncle (D) Aril
61. If pollen tube enters the ovule through integument it is referred to as :  
 (A) Porogamy (B) Chalazogamy  
 (C) Mesogamy (D) Apogamy
62. The plant in which the secondary rachis is modified to a green, flattened structure and perform photosynthesis is :  
 (A) *Asparagus* (B) *Clematis*  
 (C) *Oxalis* (D) *Parkinsonia*
63. The causative organism of Angular leaf spot of cotton is :  
 (A) *Pseudomonas* (B) *Xanthomonas*  
 (C) *Erwinia* (D) *Alternaria*



64. The pathogen for white rust disease in mustard is :  
 (A) *Albugo candida* (B) *Alternaria brassicae*  
 (C) *Phytophthora infestans* (D) *Fusarium oxysporum*
65. *Cercospora* is responsible for this disease :  
 (A) Red rot in sugarcane (B) Tikka disease in groundnut  
 (C) Blast disease in rice (D) Smut disease in wheat
66. Gene concept was proposed by :  
 (A) Operon (B) Beadle and Tatum  
 (C) Sutton (D) Watson and Crick
67. The number of structural genes in *Lac* operon of *Escherichia coli* is :  
 (A) Two (B) Three  
 (C) Five (D) Six
68. Which of the following is called as 'amber' codon ?  
 (A) UAA (B) UGA  
 (C) UAG (D) GUG
69. The diameter of DNA molecule is :  
 (A) 3.4 Å (B) 34 Å  
 (C) 2.0 Å (D) 20 Å
70. Protoplasmic fusion is facilitated by :  
 (A) EDTA (B) PEG  
 (C) TCA (D) EMS
71. The method of transferring DNA fragment onto a membrane for detection of specific sequences by hybridization is called as :  
 (A) Western blotting (B) Northern blotting  
 (C) Southern blotting (D) Electrophoresis
72. Which of the following substances is employed as antitranspirant ?  
 (A) 2, 4, - D (B) PMA  
 (C) 2, 4, 5 -T (D) Ethephon
73. The activator for the enzymes involved in the conversion of tryptophan to IAA is :  
 (A) Iron (B) Magnesium  
 (C) Manganese (D) Zinc
74. 'Whip tail disease of crucifers' is due to the deficiency of :  
 (A) Molybdenum (B) Copper  
 (C) Boron (D) Sulphur

75. In photorespiration, decarboxylation of glycine takes place in this cell organelle :  
 (A) Chloroplast (B) Peroxisome  
 (C) Glyoxisome (D) Mitochondria
76. Protein nature of enzymes was first established by :  
 (A) Sumner (B) Buchner  
 (C) Holdane (D) Northtrop
77. The hydrogen acceptor in the oxidation reactions of Hexose monophosphate pathway is :  
 (A)  $\text{NAD}^+$  (B)  $\text{NADP}^+$   
 (C) FAD (D) ATP
78. The carboxylating enzyme in bundle sheath cells of sugarcane leaf is :  
 (A) PEP-carboxylase (B) RUBP-carboxylase  
 (C) Carbonic anhydrase (D) Carboxydismutase
79. Collenchymatal cells with deposition of wall material restricted to tangential walls only is referred to as :  
 (A) Lamellar (B) Locunar  
 (C) Angular (D) Glandular
80. Inversely oriented cortical vascular bundles at the four ridges of the stem are found in :  
 (A) *Nyctanthus* (B) *Dracaena*  
 (C) *Achyranthus* (D) *Amaranthus*
81. Nucleosome concept is concerned with :  
 (A) DNA replication (B) DNA repair  
 (C) DNA folding (D) DNA transcription
82. Medullary vascular bundles are present in :  
 (A) *Amaranthus* (B) *Boerhavia*  
 (C) *Casurina* (D) *Dracaena*
83. Breaking seed dormancy by prechilling treatment of seeds is known as :  
 (A) Impaction (B) Vernalization  
 (C) Scarification (D) Stratification
84. An example to Sesquiterpene is :  
 (A) Gibberellic acid (B) Absciscic acid  
 (C) Terpentine (D) Carotene
85. Inhibition of photosynthesis by high levels of oxygen is called as :  
 (A) Warburg effect (B) Blackman effect  
 (C) Emerson's effect (D) Richmond-Long effect

86. VAM fungi helps the plants in the uptake of :  
 (A) Nitrogen (B) Phosphorus  
 (C) Potassium (D) Calcium
87. Which of the following enzymes of TCA cycle is bound to mitochondrial inner membrane ?  
 (A) Succinate dehydrogenase (B) Fumarase  
 (C) Isocitrate dehydrogenase (D) Aconitase
88. An example to photoblastic seed is :  
 (A) Nigella (B) Tobacco  
 (C) Lettuce (D) Petunia
89. The application of the following substance increases the formation of male flowers in *Cucumis sativus* :  
 (A) IAA (B) GA<sub>3</sub>  
 (C) ABA (D) BAP
90. Cavitation in Xylem causing obstruction to water movement is called as :  
 (A) Guttation (B) Plasmolysis  
 (C) Embolism (D) Bolting
91. If fats are the respiratory substrates, the value of Respiratory Quotient (R.Q.) is :  
 (A) Zero (B) One  
 (C) Less than one (D) More than one
92. The insecticides which elicit behavioural changes in pests rather than being toxic are :  
 (A) Chlorinated hydrocarbons (B) Malathion  
 (C) Pheromones (D) Permethrin
93. The element responsible for eutrophication of water bodies is :  
 (A) Nitrogen (B) Phosphorus  
 (C) Potassium (D) Sulphur
94. The top order carnivore in grass land ecosystem is :  
 (A) Grasshopper (B) Rat  
 (C) Tiger (D) Hawk
95. Caspian thickenings are the characteristic feature of :  
 (A) Epidermis (B) Cuticle  
 (C) Endodermis (D) Pericycle
96. The botanical name of Flax is :  
 (A) *Corchorus capsularis* (B) *Crotalaria juncea*  
 (C) *Ceiba pentandra* (D) *Linum usitatissimum*

97. Lateral roots originates from :  
(A) Epidermis (B) Cortex  
(C) Endodermis (D) Pericycle
98. The farthest atmospheric zone from earth surface is :  
(A) Troposphere (B) Stratosphere  
(C) Mesosphere (D) Ionosphere
99. 'Reed Swamp Stage' in hydrosere is represented by :  
(A) *Trapa* (B) *Typha*  
(C) *Cyperus* (D) *Pistia*
100. Grassland with scattered shrubs is referred to as :  
(A) Savannah (B) Steppe  
(C) Tundra (D) Prairie
101. Minamata disease in fishes is due to the toxicity of :  
(A) Lead (B) Cadmium  
(C) Mercury (D) Arsenic
102. The pyramid of number is inverted in this ecosystem :  
(A) Grassland (B) Pond  
(C) Marine (D) Tree
103. An example to Biodiesel plant is :  
(A) *Eichornia* (B) *Jatropha*  
(C) *Hevea* (D) *Subabul*
104. The area where two major communities meet and blend together :  
(A) Estuary (B) Biome  
(C) Ecotone (D) Ecad
105. Temperate evergreen forests restricted to Nilgiri hills are :  
(A) Alpines (B) Sholas  
(C) Mangroves (D) Scrubs
106. A soil conservation practice covering the soil surface with plant remains is :  
(A) Leaching (B) Terracing  
(C) Mulching (D) Contouring

107. The botanical name of oak plant is :  
(A) *Derris indica* (B) *Viscum monoicum*  
(C) *Cissus quadrangularis* (D) *Quercus suber*
108. Which of the following is a biodiversity hot spot ?  
(A) Sunderbans (B) Andamans  
(C) Western Ghats (D) Western Himalayas
109. Red Sanders belongs to this family :  
(A) Santalaceae (B) Dipterocarpaceae  
(C) Verbinaceae (D) Fabaceae
110. In Jute, the fibre is obtained from :  
(A) Epidermis (B) Pericycle  
(C) Xylem (D) Phloem
111. Cardioglycosides are obtained from the leaves of :  
(A) *Digitalis purpurea* (B) *Papaver somnifera*  
(C) *Centella asiatica* (D) *Ephedra gerardiana*
112. The plant from which safflower oil is obtained is :  
(A) *Linum usitatissimum* (B) *Corthamus tinctorius*  
(C) *Elaeis guineensis* (D) *Sesamum indicum*
113. An example to biopesticide is :  
(A) *Rhizobium* (B) *Azolla*  
(C) *Penicillium* (D) *Trichoderma*
114. Interferones are employed for the treatment of :  
(A) Hepatitis-B (B) AIDS  
(C) Cancer (D) Leucoderma
115. The Enzymes called as 'Molecular Scissors' are :  
(A) Ligases (B) Restriction endonucleases  
(C) RNA polymerases (D) DNA polymerases
116. Crown gall disease is induced by :  
(A) *Agrobacterium tumefaciens* (B) *Agrobacterium rhizogenes*  
(C) *Bacillus amylolique faciens* (D) *Bacillus thuringiensis*
117. In Citrus, triploid plants can be obtained by culturing :  
(A) Pollen (B) Somatic cells  
(C) Embryo (D) Endosperm

118. The scientist who developed PCR technique is :

- (A) Stanford
- (C) H. Smith

- (B) Kary Mullis
- (D) D. Nathon

119. "Kufri Red" is a hybrid variety of :

- (A) Water melon
- (C) Potato

- (B) Tomato
- (D) Carrot

120. Liquid nitrogen is employed for :

- (A) Sterilization of culture media
- (C) Cryopreservation

- (B) Surface sterilization of explant
- (D) Encapsulation of somatic embryos

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