

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

T.B.C. : BAC-28

Test Booklet Series

Serial No. **602008**

D

TEST BOOKLET
BOTANY

Time Allowed : 2 Hours

Maximum Marks : 300

INSTRUCTIONS TO CANDIDATES

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 YOUR OPTIONAL SUBJECT CODE AS MENTIONED ON THE BODY OF YOUR ADMISSION CERTIFICATE AND ADVERTISEMENT AT APPROPRIATE PLACES ON THE ANSWER SHEETS.
3. ENCODE CLEARLY THE TEST BOOKLET SERIES **A, B, C OR D** AS THE CASE MAY BE IN THE APPROPRIATE PLACES IN THE ANSWER SHEET USING **HB PENCIL**.
4. You have to enter your **Roll No.** on the Test Booklet in the Box provided along side. **DO NOT** write *anything else* on the Test Booklet.
5. This Test Booklet contains **120** items (questions). Each item comprises four responses (answers). You will select the response which you want to mark on the Answer 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.
6. You have to mark all your responses **ONLY** on the **separate Answer Sheet** provided by using **HB pencil**. See instruction in the Answer Sheet.
7. All items carry equal marks. All items are compulsory. Your total marks will depend only on the number of correct responses marked by you in the Answer Sheet. For each question for which a wrong answer is given by you, **one fifth (0.20) of the marks assigned to that question will be deducted as penalty.**
8. Before you proceed to mark in the Answer Sheet the responses to various items in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per instructions sent to you with your **Admission Certificate**.
9. After you have completed filling in all your responses on the Answer Sheet and the examination has concluded, you should hand over to the Invigilator the *Answer Sheet*, the Test Booklet issued to you.

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1. Pollen embryo sacs are
 - (a) Pollen like embryo sacs
 - (b) Embryo sacs developed from pollen
 - (c) Pollen developed in embryo sac
 - (d) Fused pollen and embryo sac
2. The layer of cells in the anther wall which helps in dehiscence of anther is called
 - (a) Exothecium
 - (b) Amphithecium
 - (c) Perithecium
 - (d) Endothecium
3. The special structure to facilitate the entry of pollen tube into the ovule is known as
 - (a) Synergids
 - (b) Endothecium
 - (c) Obturator
 - (d) Epistase
4. Primary endosperm cell generally contains a nucleus resulting from fusion of
 - (a) Polar nuclei with a sperm nucleus
 - (b) Polar nuclei with two sperm nuclei
 - (c) Two polar nuclei with one sperm nucleus
 - (d) None of these
5. Seed consists of an embryo surrounded by seed coat if
 - (a) the embryo develops from the integument of the ovule and seed coat developed from the zygote
 - (b) the embryo develops from the zygote and the seed coat develops
 - (c) the embryo develops from the integuments of the ovule and seed coat develops from zygote
 - (d) the embryo develops from the inner integument of the ovule and seed coat develops from zygote
6. Seed dormancy helps the plant in
 - (a) Overcoming unfavourable climatic conditions
 - (b) Preventing deterioration of seeds
 - (c) Development of healthy seeds
 - (d) Reducing viability
7. Potato scab mainly occurs in soil pH between
 - (a) 4.5-5.0
 - (b) 7.5-8.0
 - (c) 5.4-7.4
 - (d) 8.5 and above
8. Moko disease occurs in
 - (a) Wheat
 - (b) Banana
 - (c) Potato
 - (d) Rice

9. Inhibition of one organism by the metabolic product of another is called
- Antibiosis
 - Parasitic
 - Acrasis
 - Oidiopsis
10. Bacterial blight of rice in India was first reported from
- Tamil Nadu
 - Andhra Pradesh
 - Uttar Pradesh
 - Maharashtra
11. Protection of host plant from infection is called as
- Chemotaxis
 - Antagonism
 - Prophylaxis
 - Autoecious
12. Grassy shoot disease of sugarcane shows
- Symptom less
 - Different types of symptoms
 - Single type of symptom
 - Two types of symptoms
13. Induced systematic protection in diseased plants is due to enhanced
- Amylase activity
 - Lipase activity
 - Cellulase activity
 - Peroxidase activity
14. Actidione is used to control diseases of
- Fungal
 - Bacterial
 - Mycoplasmal
 - Viral
15. The most commonly used transfer system for production of transgenics is
- Pectinophora*
 - Agrobacterium radiobacter*
 - Agrobacterium tumifaciens*
 - Spodoptera*
16. The enzymes involved in pectin degradation are divided into
- Only one category
 - 2 categories
 - 3 categories
 - 4 categories
17. Binding components complementary to the host lectins present on surface of the pathogen are termed as
- Suppressors
 - Receptors
 - Activators
 - Elicitors
18. Hypersensitive response occurs only in
- Compatible combinations of host and pathogen
 - Incompatible combinations of host and pathogen
 - Only in susceptible host
 - None of the above

19. Among following plants which is a rolling leaf Xerophyte ?
- Casuarina
 - Begonia
 - Nerium
 - Saccharum
20. In India, Temperate forests are found in
- Gujarat
 - Western Ghats
 - Himalayan range
 - Andamans
21. Which is a correct path of energy flow in an ecosystem ?
- Herbivores→Carnivores→Producers→Decomposers
 - Producers→Herbivores→Carnivores→Decomposers
 - Producers→Carnivores→Herbivores→Decomposers
 - Herbivores→Producers→Carnivores→Decomposers
22. Major functional components of an ecosystem are
- Food chain and decomposers
 - Mineral cycling and flow of energy
 - Energy flow and food chain
 - Energy flow and decomposers
23. Afforestation with the purpose of environmental, aesthetic and economic development is known as
- Social forestry
 - Integrated afforestation
 - Agro forestry
 - Forest conservation
24. The main cause of deforestation in India is
- Expansion of crop lands
 - Increased demand of forest products
 - Increase in human and livestock population
 - All the above
25. Which of the following ore of iron may be used to reclaim Usar soil ?
- Iron pyrite
 - Iron alum
 - Magnetite
 - Limonite
26. Lichens are important in relation to atmospheric pollution as they
- can purify the atmosphere
 - can be multiplied in polluted atmosphere
 - can grow extensively in greatly polluted atmosphere
 - are very sensitive and good indicator of atmospheric pollution

27. Pollution caused by SO_2 and NO_2 produces
- Alkalinity
 - Acidity
 - Buffer action
 - All of the above
28. Sound above what level is considered to be noise pollution ?
- Above 30 dB
 - Above 80 dB
 - Above 100 dB
 - Above 120 dB
29. 'Greenhouse' effect is related to
- Global green algae
 - Cultivation of green plants
 - Vegetable cultivation in houses
 - Global warming
30. Water pollution due to presence of heavy metals can be corrected with the help of
- Fungi
 - Lichens
 - Hyperaccumulator plants
 - Algae
31. Archaea represent a group of
- Living organisms
 - Non-living organisms
 - Both living and non-living organisms
 - Neither living nor non-living organisms
32. Middle lamella is present between
- Adjacent cells
 - Primary wall and secondary wall
 - Secondary wall and tertiary wall
 - Tertiary wall and cell membrane
33. Middle lamella is primarily made up of
- Lignin
 - Pectin
 - Suberin
 - Cutin
34. "tau" protein is associated with
- Polymerization of peptides
 - Depolymerization of peptides
 - Polymerization of tubulins
 - Depolymerization of tubulins
35. Extra Cellular Matrix (ECM) is present in
- Only higher plants
 - Only bacteria
 - Only animals
 - All of these
36. Cytoskeleton is responsible for
- Only stability of cell shape
 - Only movements within cell
 - Only movements between cells
 - All of these
37. Cell cycle is regulated by
- Carbohydrates
 - Fatty acids
 - Amino acids
 - Proteins

38. The structural unit of living organisms was visualized for the first time by
- Jan Swammerdam
 - Spalanzani
 - Robert Hooke
 - Lois Pasteur
39. Largest period of cell cycle is
- Interphase
 - Prophase
 - Metaphase
 - Anaphase
40. Which of the following sub-stages of Prophase I is longest in duration ?
- Leptotene
 - Zygotene
 - Pachytene
 - Diploctene
41. Which one is the correct order ?
- Gene—Muton—Recon—Cistrion
 - Gene—Recon—Muton—Cistrion
 - Gene—Cistrion—Muton—Recon
 - Gene—Cistrion—Recon—Muton
42. Split genes are characteristic of
- Prokaryotes
 - Eukaryotes
 - Both, Prokaryotes and Eukaryotes
 - None of these
43. The functional segments of nucleotide chain in eukaryotic gene consists of
- Introns
 - Exons
 - Both introns and exons
 - None of these
44. The level of compaction, in DNA, achieved by the nucleosome sub-structure of chromatin is
- 7-fold
 - 10-fold
 - 30-fold
 - 42-fold
45. Nucleoplasmin plays an important role in
- The digestion of nucleus
 - The replication of DNA
 - The assembly of nucleosomes
 - The deassembly of nucleosomes
46. Molecular banding of chromosomes, in plants, is often preferred over cytological banding techniques because
- It is easier
 - It is cheaper
 - It is more reproducible and better defined
 - It is easier as well as cheaper
47. Ideal homozygosity is possible through
- Haploidy
 - Selfing
 - Out-crossing
 - Multiple crossing
48. Crosses between diploid ♂ and triploid ♀ plants are practised to produce
- Monosomics
 - Double monosomics
 - Trisomics
 - Nullisomics

49. The genes for some trait present on non-homologous chromosomes are
- Allels
 - Linked genes
 - Pseudoalleles
 - None of these
50. A gene that shows its effect on more than one character is called :
- Polygene
 - Modifying gene
 - Duplicate gene
 - Pleiotropic gene
51. A dwarf pea plant was treated with GA_3 . The plant became tall. The treated plant was then crossed with a homozygous tall pea. The results of F_2 are expected to be
- All tall
 - 3 tall : 1 dwarf
 - 1 tall : 1 dwarf
 - All dwarf
52. Absolute linkage is found in
- Birds
 - Snakes
 - ♀ *Drosophila*
 - ♂ *Drosophila*
53. Initiation codon of protein synthesis, in eukaryotes, is
- GUA
 - GCA
 - CCA
 - AUG
54. DNA having labelled thymidine is allowed to replicate in the medium having non-radioactive thymidine. After three duplications, the DNA molecules having labelled thymidine shall be
- One molecule
 - Two molecules
 - Three molecules
 - Four molecules
55. Protection against digestion of self DNA by a restriction enzyme is due to the action of
- Proteases
 - Methylases
 - Endonucleases
 - Isoschizomeras
56. The DNA that is obtained after the insertion of foreign gene into the vector DNA is called
- Plasmid DNA
 - Phage DNA
 - Chimeric DNA
 - Transformed DNA
57. Isoschizomeras are those restriction enzymes which have
- Similar cleavage sites
 - Producing similar cohesive ends
 - Similar recognition sequences
 - Either similar cleavage sites or similar recognition sequences
58. The following is an extemophlogen unit used as a biopesticide
- Bacillus thurengensis*
 - Beauvaria bassiana*
 - Spodoptera litura*
 - Bt-gene

59. The following is one of the genes introduced into rice to produce "Golden rice"
- gene for geranyl diphosphate
 - gene for carotene acetylase
 - gene for phytoene synthase
 - gene for isopentyl diphosphate
60. The production of "Golden rice" involved the transfer of genes from the following
- Daffodils
 - Daffodils and Erwinia
 - Erwinia and Agrobacterium
 - Agrobacterium and Daffodils
61. The famous Indian scientist known for DNA fingerprinting and forensic studies
- Prof. Alec Jeffreys
 - Prof. Lalji Singh
 - Prof. Nandita Das
 - Prof. Pushpa Bhargava
62. The first commercially released transgenic plant is
- Bt-cotton
 - Monsanto cotton
 - Flavr Savr
 - Golden rice
63. One of the following method is used in the culture of protoplast
- MDA culture
 - PDA culture
 - LB broth culture
 - LB broth of protoplast
64. The following hormones help in promoting shoots in the regeneration of callers
- BAP and Kinetin
 - BAP and IAA
 - IAA and Kinetin
 - IAA and 2,4-D
65. The plant derived vaccines are dependent on
- Development of resistance
 - Production of plantibodies
 - Killing of the infected pathogens
 - Production of plantigens
66. Phyforemediation refers to use of plants to
- Protect environment
 - Protect water and soils
 - Clean the pollutants
 - Clear the pollutants of water and air
67. TMV consists of
- DNA, RNA and Proteins
 - DNA and Proteins
 - RNA and Proteins
 - DNA and RNA
68. Which one of the following rank is morphologically similar and maintains its genetic isolation
- Genus
 - Species
 - Family
 - Class

69. AIDS is due to
- Bacterial infection
 - High Blood Pressure
 - Deficiency of riboflavin
 - Deficiency of T4 Lymphocytes
70. The transfer of genetic material from one bacterium to another through phages is known as
- Hybridisation
 - Transduction
 - Translation
 - Transformation
71. Slime moulds are commonly found on
- Decaying wood
 - Decaying fruit
 - Night soils
 - Mycorrhiza
72. LSD and ergot are obtained from a fungus belonging to class
- Phycomycetes
 - Ascomycetes
 - Basidiomycetes
 - Deuteromycetes
73. Red rust of tea is caused due to
- Harveyella*
 - Cephaleuros*
 - Trichodesmium*
 - Gymnodinium*
74. An advanced character of bryophytes over thallophytes is
- Absence of vascular tissue
 - Presence of flagellated gametes
 - Presence of jacketed sex organ
 - All of these
75. A fern commonly used as biofertilizer is
- Azolla*
 - Adiantum*
 - Lycopodium*
 - Marsilea*
76. Endosperm in Gymnosperm is formed by the
- Germination of a megaspore
 - Fusion of one male gamete with one polar nucleus
 - Fusion of one male gamete with two polar nuclei
 - Fusion of one male gamete with egg
77. Trimerous flowers are found in
- Salix*
 - Dracaena*
 - Arachis*
 - Nicotiana*
78. Related species which are reproductively isolated but morphologically similar are termed as
- Allopatric
 - Sympatric
 - Genotype
 - Siblings

79. Valuable plant materials likely to become irretrievably lost in the wild or cultivation are kept preserved in viable conditions in
- Gene library
 - Gene pool
 - Gene Bank
 - Bio-reserves
80. The loss of the sum total and variety of all the genes and their alleles present in a population or species is called
- Genetic conservation
 - Genetic erosion
 - Species extinction
 - Gene pool
81. The extinction of *Ginkgo biloba* has been successfully controlled by
- In situ* conservation
 - Ex situ* conservation
 - Germ plasm
 - Growing in biosphere reserves
82. Which one of the following is connected with conservation of forests ?
- Bharatpur
 - Kaziranga
 - Silent Valley
 - All of these
83. *Colchium*, *Dendrobium*, *Nepenthes*, *Podophyllum* and *Rauwolfia* are
- Extinct plant
 - Endangered plants
 - Avenue plants
 - Excise plants
84. The drug michellamine-B has been found to cure HIV (AIDS) disease. It is extracted from the leaves of
- Ancistrocladus korupensis*
 - Rauwolfia serpentina*
 - Taxus baccata*
 - Vinca rosea*
85. Example of Old World crops are
- Wheat, Sugarcane, Banana
 - Peanut, Tomato, Maize
 - Beet, Sunflower, Pineapple
 - Sunflower, Soybean, Guava
86. Which part of the plant is commonly used to obtain virus free clonal plants ?
- Roots
 - Stem
 - Shoot apices
 - Seeds
87. What kind of plants are commonly met among Apocyanaceae, Asclepiadaceae and Euphorbiaceae
- Timber plants
 - Petroleum plants
 - Fodder
 - Pomaceous plants
88. Endemic plants are
- Gregarious in habit
 - Cosmopolitan
 - Restricted in occurrence
 - Found in Andamans

89. An insecticidal alkaloid is
- Azadirachtin
 - Reserpine
 - Rotenone
 - Nicotine
90. Exploration of underutilized plants is being done to
- Conserve germ plasm
 - Procure resistance
 - Increase our Knowledge
 - Increase our resource base
91. The correct statement is
- During transpiration water along with minerals is evaporated into the atmosphere
 - Rate of transpiration increases along with the rate of respiration
 - Plants with stem modified into phylloclade transpire less
 - Plants with succulent leaves transpire more
92. The osmotic potential of a solution is denoted by the symbol
- $\psi\pi$
 - $\psi\Delta$
 - $\psi\rho$
 - ψs
93. Temporary wilting of plants is observed during midday of hot summers, this is because at high temperature
- Stomata get closed
 - Rate of transpiration is higher than rate of absorption
 - Roots fail to absorb
 - Xylem becomes inactive
94. The chief function of sieve tube element is
- to translocate the organic materials from source to sink
 - to conduct minerals
 - to transport water from roots to leaves
 - to help the plant in forming food
95. Water will be absorbed by root hairs when
- concentration of salts in the soil is high
 - concentration of the salts in the cell sap is high
 - they are separated from the soil by a membrane
 - the plant is rapidly respiring
96. A free living N_2 -fixing organism is
- Spirogyra
 - Azotobactor
 - Rhizopus
 - Pseudomonas
97. Molybdenum ions are components of both
- nitrate reductase and catalase
 - nitrogenase and urease
 - nitrate reductase and nitrogenase
 - catalase and amylase

98. Enzyme concerned with ammonia assimilation is
- nitrogen reductase
 - urease
 - glutamine synthetase
 - Arginase
99. The organic acid which plays the key role in the synthesis of amino acid is
- Pyruvic acid
 - Malic acid
 - α -ketoglutaric acid
 - Oxaloacetic acid
100. For amino-transferases, the essential co-enzyme is
- CoA
 - Pyridoxyl phosphate
 - DPN
 - NAD
101. In C_4 plants NO_3 assimilation occurs
- Bundle sheath cells
 - Mesophyll cells
 - Phloem parenchyma cells
 - Xylem vessels
102. Loss of water from leaves will be less if stomata
- are only on the lower surface.
 - Fewer on the upper than the lower surface
 - Equal number on lower and upper surfaces
 - Only on upper surface
103. The enzyme whose catalytic activity is modulated through the non-covalent binding of specific metabolites at a site on the protein other than the catalytic site is known as
- Regulatory enzyme
 - Allosteric enzyme
 - Inducible enzyme
 - Repressible enzyme
104. Light driven production of ATP by chloroplast is known as
- Photophosphorylation
 - Oxidative phosphorylation
 - Substrate level phosphorylation
 - ATP synthase
105. The number of ATP molecules required to initiate β -oxidation is
- 1
 - 2
 - 3
 - 4
106. The components of PSI are located on the
- Stroma
 - Stroma thylakoid
 - Granum thylakoid
 - Outer surface of stroma and grand thylakoid

107. The final electron acceptor in pseudocyclic electron transport in chloroplast is
- NADP⁺
 - Ferredoxin
 - Oxygen
 - NAD⁺
108. The number of oxygen atoms utilized during the aerobic oxidation of one molecule of pyruvate is
- 12
 - 6
 - 5
 - 3
109. Photolysis of water during photosynthesis occurs with the help of
- PS II
 - PS I
 - Ferredoxin
 - Cytochrome f
110. The "lock and key" theory of enzyme structure and function was proposed by
- Morgan
 - Robertson
 - Brown
 - Fischer
111. Mitochondria are
- Storehouse of a cell as they grow very fast
 - Powerhouse of a cell due to occurrence of a large number of enzymes and co-enzymes in them
 - Important for photosynthesis in plants
 - Helpful in nuclear division
112. Enzymes which occur in multiple molecular form within a plant system are called
- Vitamins
 - Co-enzymes
 - Hormones
 - Iso-enzymes
113. Enzymes taking part in glycolysis are present in
- Mitochondria
 - Cytoplasm
 - Both in mitochondria and cytoplasm
 - Vacuoles
114. In which of the following plant types both PEP-carboxylase and RuBP-carboxylase are present in the mesophyll and Chloroplasts
- CAM
 - C₄
 - C₃
 - CAM and C₄
115. A weedicide 2,4-D is a/an
- Gibberellin
 - Auxin
 - Cytokinin
 - All the above
116. Which hormone inhibits precocious germination and vivipary ?
- Auxin
 - Gibberellin
 - Cytokinin
 - ABA
117. The hormone which has negative effect on apical dominance is
- Auxin
 - Gibberellin
 - Cytokinin
 - Ethylene

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118. Some flowers open during the day and close at night. This is known as
- (a) Phototaxy
 - (b) Photonasty
 - (c) Phototropism
 - (d) Photoperiodism
119. The ripening of fruits can be accelerated by
- (a) reducing the supply of water to the plant when the fruits are maturing
 - (b) warming the surroundings artificially
 - (c) keeping the fruits in cold storage
 - (d) artificially adding ethylene gas to the atmosphere surrounding them
120. A tetrasporic embryo sac is one in which
- (a) Megaspore mother cell forms four megaspore nuclei all of which form embryo sac
 - (b) Megaspore mother cell directly develops into embryo sac
 - (c) All the four megaspore cells take part in embryo sac formation
 - (d) All four megaspores degenerate and the embryo sac develops from nucellar cells

SPACE FOR ROUGH WORK

[12]
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BAC-28

15D

SPACE FOR ROUGH WORK