

BOTANY

KTM-05-XV

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

Subject Code :

0 5

Test Booklet No. : 00659

TEST BOOKLET

BOTANY

Time Allowed : 2 (Two) Hours

Full Marks : 200

INSTRUCTIONS

1. The name of the Subject, Roll Number as mentioned in the Admission Certificate, Test Booklet No. and Subject Code shall be written legibly and correctly in the space provided on the Answer Sheet with black ball pen.
2. **Space provided for Series in the Answer Sheet is not applicable for Optional Subject. So the space shall be left blank.**
3. All questions carry equal marks. Your total marks will depend only on the number of correct responses marked by you in the Answer Sheet.
4. No candidate shall be admitted to the Examination Hall/Room 20 minutes after commencement of distribution of the paper. The Supervisor of the Examination Hall/Room will be the time-keeper and his/her decision in this regard is final.
5. No candidate shall leave the Examination Hall/Room without prior permission of the Supervisor/Invigilator. No candidate shall be permitted to hand over his/her Answer Sheet and leave the Examination Hall/Room before expiry of the full time allotted for each paper.
6. No Mobile Phone, Pager, etc., are allowed to be carried inside the Examination Hall/Room by the candidates. Any Mobile Phone, Pager, etc., found in possession of the candidate inside the Examination Hall/Room, even if on off mode, shall be liable for confiscation.
7. No candidate shall have in his/her possession inside the Examination Hall/Room any book, notebook or loose paper, except his/her Admission Certificate and other connected paper permitted by the Commission.
8. Complete silence must be observed in the Examination Hall/Room. No candidate shall copy from the paper of any other candidate, or permit his/her own paper to be copied, or give, or attempt to give, or obtain, or attempt to obtain irregular assistance of any kind.
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 *only the Answer Sheet*. You are permitted to take away with you the Test Booklet.
10. Violation of any of the above Rules will render the candidate liable to expulsion from the Examination Hall/Room and disqualification from the Examination, and according to the nature and gravity of his/her offence, he/she may be debarred from future Examinations and Interviews conducted by the Commission for appointment to Government Service.
11. Smoking inside the Examination Hall/Room is strictly prohibited.
12. **This Test Booklet contains one sheet (two pages) for Rough Work at the end.**

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[No. of Questions : 100]

SEAL

1. Which of the following does not develop from tap root system?
- (A) Napiform root
(B) Conical root
(C) Fusiform root
(D) Moniliform root
2. Cladodes are produced by
- (A) *Opuntia*
(B) *Asparagus*
(C) *Cocoloba*
(D) *Euphorbia*
3. The adventitious root system is usually
- (A) surface feeder
(B) subsurface feeder
(C) deep feeder
(D) very deep feeder
4. The rootless plant is
- (A) *Utricularia*
(B) *Viscum*
(C) *Drosera*
(D) *Nepenthes*
5. Diadelphous stamens are characteristic of
- (A) Malvaceae
(B) Poaceae
(C) Fabaceae
(D) Brassicaceae
6. Caudex type of stem is present in
- (A) coconut
(B) cocoa
(C) neem
(D) bamboo
7. *Mentha* produces
- (A) runner
(B) sucker
(C) stolon
(D) offset
8. Hydrophily occurs in
- (A) *Vallisneria*
(B) *Poinsettia*
(C) *Bombax*
(D) *Salvia*

9. Thorns are
- (A) modified stem structures
 - (B) modified leaf parts
 - (C) superficial outgrowths of stem
 - (D) hard and stiff plant parts
10. In dichogamy
- (A) anthers are sterile whereas ovules are fertile
 - (B) ovules are sterile whereas anthers are fertile
 - (C) pollen and stigma of the flower mature at different times
 - (D) pollen and stigma of the flower mature at the same time
11. Endosperm of angiosperms results after fertilization from
- (A) synergids
 - (B) secondary nucleus
 - (C) antipodal cells
 - (D) egg
12. The mode of arrangement of leaves on the stem and its branches is called
- (A) phyllode
 - (B) phyllotaxy
 - (C) cladode
 - (D) phylloclade
13. Verticillaster inflorescence is found in
- (A) *Amaranthus*
 - (B) *Achyranthus*
 - (C) *Acalypha*
 - (D) sacred basil
14. The rose is
- (A) hypogynous
 - (B) perigynous
 - (C) epigynous
 - (D) half-perigynous
15. Seeds in a mature ovary are developed from
- (A) embryo
 - (B) embryo sac
 - (C) ovule
 - (D) endosperm
16. Self-pollination in flowers which never open up in its life span is known as
- (A) autogamy
 - (B) homogamy
 - (C) cleistogamy
 - (D) allogamy

17. In pomegranate, the fruit is known as

- (A) balausta
- (B) pepo
- (C) amphisarca
- (D) hesperidium

18. The cell theory was proposed by

- (A) Schleiden and Schwann
- (B) Darwin and Wallace
- (C) Mendel and Morgan
- (D) Watson and Crick

19. Ribosomes are centre for

- (A) respiration
- (B) protein synthesis
- (C) photosynthesis
- (D) lipid synthesis

20. Tonoplast is a differentially permeable membrane that encloses the

- (A) cytoplasm
- (B) nucleus
- (C) vacuole
- (D) mitochondria

21. Beauty of *Bougainvillea* flower is because of

- (A) calyxes
- (B) bracts
- (C) sepals
- (D) petals

22. Endosperm is absent in the seeds of

- (A) gram
- (B) cumin
- (C) orchid
- (D) castor

23. The 'eyes' of potato tubers are

- (A) shoot buds
- (B) flower buds
- (C) root buds
- (D) axillary buds

24. The plant with most durable wood is

- (A) hollong
- (B) sissoo
- (C) sal
- (D) teak

25. Cork tissue arises from

- (A) periderm
- (B) phellogen
- (C) phelloderm
- (D) phellem

26. Medullary rays are made up of

- (A) parenchymatous cells
- (B) sclerenchymatous cells
- (C) fibres
- (D) collenchymatous cells

27. Growth rings are formed by the activity of

- (A) cambium
- (B) phloem
- (C) xylem
- (D) both phloem and xylem

28. The layer of cells between endodermis and vascular bundles is called

- (A) hypodermis
- (B) cortex
- (C) pith
- (D) pericycle

29. Aerenchyma is found in

- (A) lithophytes
- (B) sciophytes
- (C) hydrophytes
- (D) xerophytes

30. Quiescent centre is associated with

- (A) shoot
- (B) root
- (C) ground tissue
- (D) epidermal tissue

31. Anomalous secondary growth in *Boerhaavia* shows

- (A) formation of extrastelar cambium
- (B) formation of interxylary cork
- (C) formation of interxylary phloem
- (D) formation of successive rings of cambia which develop either in the form of concentric rings or segments

32. Which is correct for sapwood?

- (A) Tyloses are found in them
- (B) They are darker in colour
- (C) They are functional in conduction and storage
- (D) They produce timber of commerce

33. In dicotyledonous roots

- (A) pith is large and well-developed
- (B) secondary growth does not occur
- (C) number of vascular bundles varies from 2-6
- (D) number of vascular bundles more than 6 or 8

34. *Chlorella* reproduces only asexually by the formation of

- (A) autospores
- (B) biflagellate zoospores
- (C) quadriflagellate zoospores
- (D) uniflagellate zoospores

35. Chitin is a

- (A) polysaccharide
- (B) nitrogenous polysaccharide
- (C) lipoprotein
- (D) protein

36. *Volvox* colonies are found in

- (A) freshwater ponds
- (B) salt lakes
- (C) seawater
- (D) spring

37. The antibiotic produced by *Chlorella* is known as

- (A) chloramin
- (B) chloromycetin
- (C) chlorellin
- (D) chloramphenicol

38. Reticulate chloroplast with pyrenoids are present in

- (A) *Oedogonium*
- (B) *Ulothrix*
- (C) *Batrachospermum*
- (D) *Chlorella*

39. Which of the following is a prokaryotic alga?

- (A) *Polysiphonia*
- (B) *Cladophora*
- (C) *Anabaena*
- (D) *Ectocarpus*

40. An example of colonial coenocytic alga is

- (A) *Spirogyra*
- (B) *Oedogonium*
- (C) *Hydrodictyon*
- (D) *Volvox*

41. Oogamous mode of reproduction is seen in
- (A) *Ulothrix*
 - (B) *Cladophora*
 - (C) *Chlorella*
 - (D) *Vaucheria*
42. Pyrenoids are
- (A) starch bodies surrounded by protein grains
 - (B) starch bodies surrounded by oil droplets
 - (C) protein bodies surrounded by oil droplets
 - (D) protein bodies surrounded by starch plates
43. Reserve food 'floridean starch' is found in
- (A) *Chlamydomonas*
 - (B) *Polysiphonia*
 - (C) *Chara*
 - (D) *Vaucheria*
44. *Polysiphonia* exhibits a special kind of alternation of generations which is called
- (A) isomorphic
 - (B) haplontic
 - (C) diplontic
 - (D) triphasic
45. The cystocarp in *Batrachospermum* is
- (A) haploid
 - (B) diploid
 - (C) triploid
 - (D) polyploid
46. White rust of crucifers is caused by
- (A) *Puccinia*
 - (B) *Ustilago*
 - (C) cystocarp
 - (D) *Peziza*
47. Clamp connection is common in
- (A) Ascomycetes
 - (B) Basidiomycetes
 - (C) Phycomycetes
 - (D) Deuteromycetes
48. The term 'mycorrhiza' was coined by
- (A) Frank
 - (B) Beijerinck
 - (C) Campbell
 - (D) Ivanovsky

49. In lichen, the type of symbiotic process is known as
- (A) heliotism
 - (B) symbiotism
 - (C) halotrophy
 - (D) heliotrophy
50. Which of the following is used in baking of bread?
- (A) *Rhizopus stolonifer*
 - (B) *Saccharomyces cerevisiae*
 - (C) *Claviceps*
 - (D) *Penicillium notatum*
51. Covered smut of barley is caused by
- (A) *Ustilago nuda*
 - (B) *Ustilago tritici*
 - (C) *Ustilago hordei*
 - (D) *Ustilago graminis*
52. Green mould is common name for
- (A) *Neurospora*
 - (B) *Mucor*
 - (C) *Penicillium*
 - (D) *Saccharomyces*
53. The most economically important bryophyte among the following is
- (A) *Funaria*
 - (B) *Marchantia*
 - (C) *Riccia*
 - (D) *Sphagnum*
54. Gemma cups are found in
- (A) *Sphagnum*
 - (B) *Marchantia*
 - (C) *Riccia*
 - (D) *Anthoceros*

55. Pseudoelaters are found in the sporophyte of
- (A) *Marchantia*
 - (B) *Pellia*
 - (C) *Polytrichum*
 - (D) *Anthoceros*
56. Rhizoids of *Sphagnum* are
- (A) unicellular
 - (B) green-coloured
 - (C) unicellular with septa
 - (D) multicellular with oblique septa
57. The common element in the xylem of pteridophyte is
- (A) trachea
 - (B) tracheid
 - (C) xylem parenchyma
 - (D) xylem fibre
58. Protocorm is found in
- (A) *Lycopodium*
 - (B) *Selaginella*
 - (C) *Equisetum*
 - (D) *Marsilea*
59. The stele in the rhizome of *Marsilea* is
- (A) protostele
 - (B) haplostele
 - (C) dictyostele
 - (D) amphiphloic siphonostele
60. Formation of sporophyte from a vegetative portion of prothallus is called
- (A) apocarpy
 - (B) apogamy
 - (C) apomixis
 - (D) apospory
61. Which of the following does not have a pith?
- (A) Protostele
 - (B) Solenostele
 - (C) Siphonostele
 - (D) Dictyostele
62. Coralloid roots occur in
- (A) *Cycas*
 - (B) *Pinus*
 - (C) *Gnetum*
 - (D) *Ephedra*

63. *Cycas* ovule is

- (A) anatropous
- (B) orthotropous
- (C) hemianatropous
- (D) campylotropous

64. *Pinus* differs from angiosperm in

- (A) tree habit
- (B) green leaves
- (C) presence of wood
- (D) ovules without an enclosing ovary

65. The female gametophyte of *Gnetum* is

- (A) monosporic
- (B) bisporic
- (C) trisporic
- (D) tetrasporic

66. The fossil organisms which show characters of two different groups of animals are called

- (A) transitional forms
- (B) missing links
- (C) transitory organisms
- (D) past links

67. Linnaeus' system of classification is

- (A) artificial system
- (B) natural system
- (C) phylogenetic system
- (D) synthetic system

68. Spikelets with glumes are found in

- (A) Cyperaceae
- (B) Poaceae
- (C) Arecaceae
- (D) Araceae

69. *Allium cepa* belongs to

- (A) Musaceae
- (B) Arecaceae
- (C) Brassicaceae
- (D) Liliaceae

70. The botanical name of sunflower is

- (A) *Helianthus annuus*
- (B) *Helianthus tuberosus*
- (C) *Tagetes patula*
- (D) *Tagetes erecta*

71. Osmotic pressure of a solution is usually measured in

- (A) kelvin
- (B) joule
- (C) pascal
- (D) newton

72. Root pressure is developed in

- (A) xylem
- (B) phloem
- (C) cortex
- (D) pith

73. Which one of the following theories for ascent of sap was proposed by Sir J. C. Bose?

- (A) Pulsation theory
- (B) Root pressure theory
- (C) Relay pump theory
- (D) Transpiration pull theory

74. When the plant cells are fully turgid, the turgor pressure is equal and opposite to the

- (A) diffusion pressure deficit
- (B) osmotic pressure
- (C) wall pressure
- (D) diffusion pressure

75. Conduction of sap in plants occurs through

- (A) heartwood
- (B) bark
- (C) xylem
- (D) cortex

76. The water potential and osmotic potential of pure water are

- (A) 100 and zero
- (B) zero and zero
- (C) 100 and 100
- (D) zero and 100

77. Rate of transpiration can be measured by

- (A) Ganong's potometer
- (B) auxanometer
- (C) respirometer
- (D) porometer

78. Stomata open at night in

- (A) CAM plants
- (B) C_3 plants
- (C) C_4 plants
- (D) succulent plants

79. The most abundant element present in plant is
- (A) nitrogen
 - (B) manganese
 - (C) carbon
 - (D) iron
80. In N_2 -fixation process, nitrite is converted to nitrate by
- (A) *Nitrobacter*
 - (B) *Azotobacter*
 - (C) *Nitrosomonas*
 - (D) *Azospirillum*
81. In photosynthesis, reaction centre of pigment system-I is
- (A) P_{680}
 - (B) P_{690}
 - (C) P_{700}
 - (D) P_{720}
82. Release of water from plants as water droplet is known as
- (A) root pressure
 - (B) transpiration
 - (C) osmotic pressure
 - (D) guttation
83. The end products of aerobic respiration are
- (A) sugar and oxygen
 - (B) water and energy
 - (C) CO_2 , H_2O and energy
 - (D) CO_2 and energy
84. Apical dominance can be overcome by the application of
- (A) auxin
 - (B) gibberellin
 - (C) cytokinin
 - (D) florigen
85. Which of the following is a long-day plant?
- (A) *Glycine max*
 - (B) Spinach
 - (C) *Mirabilis jalapa*
 - (D) Soya bean
86. Ecological succession on the sandy soil is called
- (A) psammosere
 - (B) xerosere
 - (C) hydrosere
 - (D) holosere

87. Mendel's second law is the law of

- (A) independent assortment
- (B) segregation
- (C) dominance
- (D) polygenic inheritance

88. The genotype of a plant showing a dominant phenotype can be determined by

- (A) backcross
- (B) testcross
- (C) dihybrid cross
- (D) pedigree analysis

89. Down's syndrome is due to

- (A) linkage
- (B) sex-linked inheritance
- (C) crossing-over
- (D) non-disjunction of chromosome

90. Chemical theory of origin of life was given by

- (A) Stanley Miller
- (B) Spallazani
- (C) Oparin and Haldane
- (D) Louis Pasteur

91. The wings of bat and bird are

- (A) homologous but not analogous
- (B) neither homologous nor analogous
- (C) analogous but not homologous
- (D) vestigial

92. Galapagos Islands are associated with the name of

- (A) Lamarck
- (B) Wallace
- (C) Darwin
- (D) Weismann

93. Which one is linked to evolution?

- (A) Extinction
- (B) Competition
- (C) Variation
- (D) Reproduction

94. Which part of *Rauwolfia* plant is used to obtain the alkaloid reserpine?

- (A) Leaf
- (B) Bark
- (C) Root
- (D) Stem

95. The botanical name of jute is

- (A) *Shorea robusta*
- (B) *Corchorus capsularis*
- (C) *Tectona grandis*
- (D) *Mangifera indica*

96. Protein is obtained mainly from

- (A) belladonna
- (B) rice
- (C) mustard
- (D) soya bean

97. The sugar present in sugarcane is

- (A) glucose
- (B) fructose
- (C) sucrose
- (D) ribose

98. Green tea is prepared by

- (A) fermentation of tea leaves
- (B) without fermentation of tea leaves
- (C) adding special type of enzyme
- (D) adding green colour

99. Chromosomes are best seen in

- (A) interphase
- (B) prophase
- (C) metaphase
- (D) telophase

100. Which of the following is structural subunit of DNA?

- (A) Protein
- (B) Carbohydrate
- (C) RNA
- (D) Nucleotide