60214

ROLL No. | | | | | |

TEST BOOKLET No. 096

TEST FOR POST GRADUATE PROGRAMMES

BOTANY

Time: 2 Hours Maximum Marks: 450

INSTRUCTIONS TO CANDIDATES

1. You are provided with a Test Booklet and an Optical Mark Reader (OMR) Answer Sheet to mark your responses. Do not soil the Answer Sheet. Read carefully all the instructions given on the Answer Sheet.
2. Write your Roll Number in the space provided on the top of **this page**.
3. Also write your Roll Number, Test Code, and Test Subject in the columns provided for the same on the **Answer Sheet**. Darken the appropriate bubbles with a **Ball Point Pen.**
4. The paper consists of 150 objective type questions. All questions carry equal marks.
5. Each question has four alternative responses marked **A, B, C** and **D** and you have to **darken** the bubble fully by a **Ball Point Pen** corresponding to the correct response as indicated in the example shown on the Answer Sheet.
6. Each correct answer carries 3 marks and each wrong answer carries 1 minus mark.
7. Space for rough work is provided at the end of this Test Booklet.
8. You should return the Answer Sheet to the Invigilator before you leave the examination hall. However, you can retain the Test Booklet.
9. Every precaution has been taken to avoid errors in the Test Booklet. In the event of any such unforeseen happenings, the same may be brought to the notice of the Observer/Chief Superintendent in writing. Suitable remedial measures will be taken at the time of evaluation, if necessary.

SEAL

60214

BOTANY

1. The smallest living organism is

(A) Amoeba
(B) Virus
(C) Virion
(D) Bacterium

2. Most of the desert plants bloom during night time because

(A) Their blooming is controlled by low temperature
(B) They are sensitive to the phases of moon
(C) The desert insects eat away flowers during day time
(D) They prefer to make desert fragrant

3. It is possible to produce seedless tomato fruits by

(A) Applying trace elements in tomato fruits
(B) Spraying mineral solution on plants
(C) Applying fertilizers containing radioactive elements
(D) Spraying hormones on flowers

4. Which one of the following is a modified stem?

(A) Onion
(B) Sweet Corn
(C) Coconut
(D) Tomato

5. A single thylakoid per granum is found in the chloroplasts of

(A) Rhodophyceae
(B) Phaeophyceae
(C) Chlorophyceae
(D) Cryptophyceae

6. Algae found growing attached to bottom soil are called as

(A) Epilithic
(B) Benthos
(C) Epipelic
(D) Sciophytic

7. Heterocysts are found in

(A) *Nostoc* (B) *Cytopus*
(C) *Ulothirix* (D) *Aspergillus*

8. The female sex organ of red algae is called

(A) Oogonium (B) Carpogonium
(C) Female conceptacle (D) Female cryptoblast

9. Ergotism is caused by the consumption of

(A) Contaminated grains (B) Rotting vegetables
(C) Contaminated water (D) Safe cooked food

10. Shape of chloroplasts in *Chlorella* is

(A) Girdle shaped (B) Parietal
(C) Discoid (D) Stellate

11. Heterothallism was discovered in

(A) *Mucor* (B) *Aspergillus*
(C) *Puccinia* (D) *Albugo*

12. Columella is present in the sporangium of

(A) *Spirogyra* (B) *Ulothrix*
(C) Yeast (D) *Rhizopus*

13. The ascocarp of *Penicillium* is a

(A) Perithesium (B) Apothesium
(C) Cleistothesium (D) Pseudothesium

14. Which of the following species of *Agaricus* is poisonous?

(A) *A.campestris* (B) *A.bisporus*
(C) *A.xanthodermus* (D) *A.rodmani*

15. Which of the plant cell organelles lacks DNA?

(A) Nucleus
(B) Chloroplast
(C) Lysosome
(D) Mitochondrion

16. Epiphytes are plants which depend on other plants for

(A) Food
(B) Mechanical support
(C) Shade
(D) Water

17. In a bisexual flower, when androecium and gynoecium mature at different times, the phenomenon is known as

(A) Dichogamy
(B) Herkogamy
(C) Heterogamy
(D) Monogamy

18. Which one of the following parts of the pitcher plant becomes modified into a pitcher?

(A) Stem
(B) Stipule
(C) Leaf
(D) Petiole

19. Which of the following types of light are strongly absorbed by plants?

(A) Violet and orange
(B) Blue and red
(C) Indigo and yellow
(D) Yellow and violet

20. Flame of the forest is

(A) *Hibiscus rosasinensis*
(B) *Clitoria pulcherima*
(C) *Mimosa pudica*
(D) *Delonix regia*

21. Tuberculosios is caused due to the infection of

(A) *Clostridium*
(B) *Mycobacterium*
(C) *Salmonella*
(D) *Treponema*

22. Diaminopimelic acid and muramic acid are constituents of cell walls of

(A) Higher plants
(B) Fungi
(C) Bacteria
(D) Bacteriophages

23. Which one of the following can be cultivated for ethanol?

(A) Jatropha
(B) Maize
(C) Pongamia
(D) Sunflower

24. Bacteriophage is the name given to a

(A) Bacterium that infects a higher plant cell
(B) Virus which infects a bacterium
(C) Bacterium which infects an animal cell
(D) An organelle of the bacterium

25. Which one of the following is a tiger reserve in south India?

(A) Aravalli hills
(B) Anaimallis
(C) Shillong
(D) Eastern ghat

26. Which one of the following is an aquatic bryophyte?

(A) *Ricciocarpus natans*
(B) *Mnium hornum*
(C) *Anthoceros*
(D) *Sphaerocarpus cristatus*

27. Identify the molecule that is a non-nucleoside

(A) Adenosine
(B) Cytosine
(C) Thiamine
(D) Guanosine

28. How many pairs of chromosomes does the human cell contain?

(A) 23
(B) 22
(C) 21
(D) 24

29. The common sugar is chemically made up of

(A) Galactose and Mannose
(B) Glucose and Galactose
(C) Glucose and Fructose
(D) Glucose and Mannose

30. Choose the plant enzyme from the following.

(A) Trypsin
(B) Chymotrypsin
(C) Trypsinogen
(D) Papain

31. The amphithecium in *Riccia* forms

(A) Calyptra only
(B) Outer sporogenous tissue and jacket
(C) Jacket only
(D) Calyptra and jacket

32. The thalli of *Anthoceros* are

(A) Dichotomously branched
(B) Variously lobed
(C) Racemosely branched
(D) Linear and unbranched

33. The constituent(s) of cell membrane include

(A) Carbohydrate
(B) Lipids
(C) Lipids and proteins
(D) Protein

34. The sporangial epidermis of *Rhynia* is characterised by the presence of

(A) Silica
(B) Cystoliths
(C) Cuticle
(D) All of these

35. The jacket of a mature sporangium of *Equisetum* is

(A) 1-2 layered
(B) 3-5 layered
(C) 4-8 layered
(D) Multilayered

36. The vascular organisation of rhizome of *Marsilia* precisely corresponds to

(A) Ectophloic solenostele
(B) Amphiphloic solenostele
(C) Ectophloic siphonostele
(D) Amphiphloic siphonostele

37. The antherozoids of *Dryopteris* are

(A) Coiled and multiflagellate
(B) Coiled and biflagellate
(C) Sickle-shaped and multiflagellate
(D) Sickle-shaped and biflagellate

38. The Gymnosperm was recognised as a distinct group by

(A) Theophrastus
(B) Aristotle
(C) Brown
(D) Linnaeus

39. The number of ovules in the female cone of *Ephedra* is

(A) Two
(B) Four
(C) Eight
(D) Numerous

40. The leaf arrangement in *Cycas* is

(A) Spiral
(B) Verticellate
(C) Superposed
(D) Polycyclic

41. The wing in *Pinus* seed is derived from

(A) Bract scale
(B) Seed coat
(C) Ovuliferous scale
(D) Cone axix

42. Pneumatophores are usually present in

(A) Mangrove plants
(B) Xerophytes
(C) Hydrophytes
(D) Epiphytes

43. The archegonia of *Pinus* are generally

(A) Four-celled
(B) Six-celled
(C) Eight-celled
(D) Ten-celled

44. Which of the following is implicated in providing strength to the plant body?

(A) Parenchyma
(B) Collenchyma
(C) Sclerenchyma
(D) B and C

45. What is absent in a plant root?

(A) Vacuole
(B) Chloroplast
(C) Mitochondrion
(D) Leucoplast

46. Elaioplasts are found in higher plants and synthesize

(A) Starch
(B) Proteins
(C) Oils
(D) Pigments

47. Which of the following is the transitional meristem?

(A) Root hair
(B) Collenchyma
(C) Intercalary meristem
(D) Ground meristem

48. The periderm in woody dicots eventually replaces the

(A) Phloem
(B) Epidermis
(C) Xylem
(D) Pith

49. The channels of the protoplasm that exist through cell walls that connect one cell to another is called

(A) Stomata
(B) Watsmata
(C) Plasmodesmata
(D) Scleroid

50. Which of the following families shows bicollateral vascular bundles?

(A) Gramineae
(B) Solanaceae
(C) Cruciferae
(D) Cactaceae

51. Among the following, which group has recently originated?

(A) Bennittetales
(B) Coniferales
(C) Cycadales
(D) Gnetales

52. Which one of the following is correctly matched?

(A) Solanaceae : Adelphous condition
(B) Asteraceae: Syngenesious condition
(C) Brassicaceae: Didynamous condition
(D) Acanthaceae: Retinoculum

53. The leaves of plants under water stress contain higher concentration of

(A) Gibberellic acid
(B) Abscisic acid
(C) Ethylene
(D) Indole-acetic acid

54. The edible portion in *Cyperus rotundus* is

(A) Phylloclade
(B) Tuber
(C) Rhizome
(D) Bulb

55. Petioles are modified into tendrils in

(A) *Antigonon*
(B) *Clematis*
(C) *Passiflora*
(D) *Gloriosa*

56. Storage leaves are found in

(A) *Trapa*
(B) *Allium*
(C) *Triticum*
(D) Maize

57. The half-life period of radioactive ^{32}P is

(A) 143 days
(B) 87.7 days
(C) 14.3 days
(D) 877 days

58. Which one of the following is a nutritive tissue?

(A) Tapetum
(B) Endothelium
(C) Endosperm
(D) Endothecium

59. The leaf margin with rounded teeth is described as

(A) Crenate
(B) Dentate
(C) Serrate
(D) Runcinate

60. Bostryx is a

(A) Uniparous scorpioid cyme
(B) Uniparous helicoid cyme
(C) Dichasium ending in monochasium
(D) Polychasium ending in monochasium

61. When the stamens are fused throughout their whole length, they are termed as

(A) Syngenesious
(B) Connivent
(C) Gynandrous
(D) Synandrous

62. Which one of the following structures arises from the funiculus during post-fertilization development of the ovule?

(A) Aril
(B) Operculum
(C) Caruncle
(D) Perisperm

63. What is the type of inflorescence found in Apiaceae?

(A) Catkin
(B) Cyathium
(C) Umbellate
(D) Spike

64. The hydrostatic pressure developed within a plant cell through osmosis when exerted on its wall is called as

(A) Wall pressure
(B) Turgor pressure
(C) Suction pressure
(D) Osmotic pressure

65. The conversion of nitrate to nitrite in the cytosol is catalyzed by

(A) Nitrate reductase
(B) Nitrite reductase
(C) Glutamine synthase
(D) Glutamate synthase

66. The site of nitrogen fixation in Cyanobacterium is

(A) Akinetes
(B) Chloroplast
(C) Mitochondrion
(D) Heterocyst

67. When the placenta appears to be borne on the septae, the placentation is described as

(A) Free-central
(B) Parietal
(C) Laminar
(D) None of the above

68. Translator mechanism for pollination is seen in

(A) *Salvia*
(B) *Vallisneria*
(C) *Viola*
(D) *Calotropis*

69. The wasp *Blastophaga* is associated with the pollination of

(A) *Calotropis*
(B) *Rafflesia*
(C) *Ficus*
(D) *Quercus*

70. A unicellular blue green alga is

(A) Ulothrix
(B) *Synneaho cystis*
(C) Nostoc
(D) Haphlo siphon

71. Which of the following genera is characterised by the production of geocarpic fruits?

(A) *Cucurbita* (B) *Pisum*
(C) *Glycine*. (D) *Arachis*

72. The first part to emerge from a germinating seed is the

(A) Hypocotyle (B) Radicle
(C) Leaf primordium (D) Stem tip

73. The first plant whose genome was completely sequenced is

(A) Rice (B) Mustard
(C) Arabidopsis (D) Castor

74. The embryo rescue technique is used for

(A) Ovule culture (B) Ovary culture
(C) Hybrid embryo (D) All of the above

75. Polyethylene glycol is used as a

(A) Mutagen (B) Immnogen
(C) Carcinogen (D) Fusogen

76. The coenzyme form of pantothenic acid is

(A) Acetyl CoA (B) Cofactor A
(C) Coenzyme A (D) Pantothenyl phosphate

77. Puromycin is an inhibitor of

(A) RNA synthesis (B) Protein biosynthesis
(C) cDNA synthesis (D) Electron transport chain

78. The reaction center in PSII is

(A) P580 (B) P480
(C) P700 (D) P680

79. A eukaryotic ribosome dissociates into

(A) 50S subunit + 30S subunit (B) 50S subunit + 40S subunit
(C) 60S subunit + 40S subunit (D) 60S subunit + 20S subunit

80. Which one of the following compounds generates greater energy?

(A) FADH H+ (B) FMN
(C) Succinate (D) NADH H+

81. Organogenesis is a process of induction of

(A) Callus (B) Unipolar structure
(C) Trechids (D) Quaternary structure

82. Which of the following organelles contain DNA?

(A) Mitochondrion and Chloroplast
(B) Mitochondrion and Cell wall
(C) Golgi body and Chloroplast
(D) Endoplasmic reticulum and Golgi

83. Flavr Savr is a transgenic

(A) Cotton (B) Tobacco
(C) Potato (D) Tomato

84. The ubisch bodies are produced in the

(A) Epidermis (B) Endothecium
(C) Middle layers (D) Tapetum

85. Virus free plants are produced following

(A) Embryo culture (B) Anther culture
(C) Pollen culture (D) Meristem culture

86. Cryopreservation in liquid nitrogen is done at

(A) –198°C
(B) –108°C
(C) –20°C
(D) –98°C

87. The transgenic soybean grown in the field carries resistance to

(A) Nodulation
(B) Defoliation
(C) Herbicide
(D) Root rots

88. Inversion is

(A) Somatic mutation
(B) Genetic mutation
(C) Point mutation
(D) Chromosomal mutation

89. The mutation theory was put forth by

(A) Gregor Mendel
(B) Aristotle
(C) De Vries
(D) Darwin

90. If the pollen tube enters the ovule through funiculus, the phenomenon is known as

(A) Porogamy
(B) Chalazogamy
(C) Mesogamy
(D) Heterogamy

91. Double fertilization was first observed in

(A) *Lilium* and *Fritillaria*
(B) *Tulipa* and *Petunia*
(C) *Allium* and *Zea*
(D) *Orchis* and *Tulipa*

92. The phenomenon of polyembryony was first observed in

(A) *Magnifera*
(B) *Cucurbita*
(C) *Citrus*
(D) *Euphorbia*

93. The inflorescence of a Compositae member is

(A) Corymb
(B) Cyathium
(C) Catkin
(D) Capitulum

94. Basal placentation is found in

(A) Leguminosae (B) Compositae
(C) Malvaceae (D) Cruciferae

95. The leaves in the family Malvaceae are usually

(A) Alternate and exstipulate (B) Alternate and stipulate
(C) Opposite and exstipulate (D) Opposite and stipulate

96. Which of the following is a solanaceous tree?

(A) *Solanum dulcamara* (B) *S. seaforthianum*
(C) *S. nigrum* (D) *S. grandiflorum*

97. The fruit of grasses is usually a

(A) Capsule (B) Achene
(C) Nut (D) Caryopsis

98. The flowers in Verbanaceae are generally

(A) Zygomorphic, bisexual (B) Zygomorphic, unisexual
(C) Actinomorphic, bisexual (D) Actinomorphic, unisexual

99. Apocynaceae resembles Asclepiadceae in having

(A) Laticifers in the stem (B) Alternate phyllotaxy
(C) Polyandrous stamens (D) Translators

100. Apricots are rich in

(A) Vitamin A and B (B) Vitamin C
(C) Vitamin D (D) Vitamin D and E

101. The type of stem modification seen in *Bellis perennis* is

(A) Runners (B) Suckers
(C) Stolons (D) Corms

102. In which one of the following plants is the oil stored in the endosperm?

(A) Ground nut
(B) Sesame
(C) Soybean
(D) Coconut

103. Which of the following is a prokaryote?

(A) *Spirogyra*
(B) *Rhizopus*
(C) *Escherichia*
(D) *Amoeba*

104. Lignin usually appears in

(A) Xylem and sclerenchyma
(B) Xylem and cork
(C) Sclerenchyma and cork
(D) All of these

105. The main function of plasma membrane is to

(A) regulate the flow of materials into and outside the cell
(B) maintain the cell shape and size
(C) control all cellular activities
(D) store cell material

106. The shape of the chromosomes could be clearly observed during

(A) Prophase
(B) Metaphase
(C) Anaphase
(D) Telophase

107. Mitochondria are absent in

(A) Yeast
(B) Fungi
(C) Bacteria
(D) Green algae

108. The chloroplasts of *Zygnema* are

(A) Stellate
(B) Girdle-shaped
(C) Spiral
(D) Reticulate

109. The enzyme which contains iron-sulfur cluster is

(A) Nitrogenase
(B) Nitrite reductase
(C) Nitrate reductase
(D) Glutamate dehydrogenase

110. The following pigment is responsible for photomorphogenesis

(A) Chlorophyll
(B) Carotene
(C) Xanthophyll
(D) Phytochrome

111. Cholesterol is biosynthesized from

(A) Acetyl CoA
(B) Malonyl CoA
(C) IPP
(D) Shikimic acid

112. The type of light microscopy used to visualise living cells is

(A) fluorescence microscopy
(B) electron microscopy
(C) phase-contrast microscopy
(D) confocal scanning microscopy

113. Choose the organelle that is covered by single membrane

(A) Mitochondria
(B) Peroxisomes
(C) Chloroplasts
(D) None of the above

114. Leghaemoglobin is involved in

(A) Electron transport
(B) Photosynthesis
(C) Anaerobic respiration
(D) Nitrogen fixation

115. To which category of micro organisms blue-green algae mostly belong?

(A) Asymbiotic N_2 fixers
(B) Symbiotic N_2 fixers
(C) Nitrifiers
(D) Denitrifiers

116. What is the UV light range?

(A) 100 - 300 nm
(B) 300 - 500 nm
(C) 500 - 800 nm
(D) 800 - 1000 nm

117. MS medium is invariably used for culturing

(A) Virus
(B) Plant tissue
(C) Animal cell
(D) Mammalian tissue

118. What is used as a model plant system to study genomes, nowadays?

(A) *Saccharomyces cerevisiae*
(B) *Drosophila melanogaster*
(C) *Arabiopsis thaliana*
(D) *Nicotiana tabacum*

119. The power house of the cell is

(A) Mitochondrion
(B) Ribosome
(C) Golgi body
(D) Peroxysome

120. Acid rain is chiefly due to atmospheric pollution

(A) CO_2
(B) SO_2
(C) O_3
(D) HCl

121. Plant developmental processes such as flowering is controlled by

(A) Pheromone
(B) Pfr
(C) Carotenoids
(D) None of the above

122. The most abundant enzyme in the higher plants is

(A) Nitrogenase
(B) Glutamine synthase
(C) RUBISCO
(D) Papain

123. Yellowing of leaves of higher plants is due to deficiency of

(A) Potassium
(B) Calcium
(C) Sulphur
(D) Manganese

124. Which one is a medicinal plant?

(A) *Chrysantamum* spp.
(B) *Oryza sativa*
(C) *Aloe Vera*
(D) *Carica papaya*

125. The biggest herbarium of the world is located at the

(A) Royal Botanic garden, England
(B) Royal Botanic garden, Moscow, Russia
(C) Royal Botanic garden, Washington, USA
(D) Royal Botanic garden, Calcutta, India

126. Clove is obtained from

(A) Root
(B) Stem
(C) Flower buds
(D) Bark

127. Vacuoles are surrounded by a membrane called

(A) Macrophage
(B) Tonoplast
(C) Fibroplast
(D) Plasmadesmata

128. The internal phloem is also called as

(A) Embedded phloem
(B) Extraxylary phloem
(C) Concentric phloem
(D) Intraxylary phloem

129. The physical expression of genetic information in an organism is called its

(A) Phenotype
(B) Genotype
(C) Trait indicator
(D) Protein profile

130. Polygenic traits are those determined by

(A) Non-nuclear DNA
(B) More than one gene
(C) Sex
(D) Only one gene

131. The molecular scissors in the bacterial cell are

(A) DNA ligase
(B) Plasmid
(C) Vector
(D) Restriction enzymes

132. A plant cell without cell wall is called

(A) Transgenic cell
(B) Protoplast
(C) Tonoplast
(D) Chromoplast

133. The plasmid that is used for generating transgenic plants is

(A) Pr-plasmid
(B) Ti-plasmid
(C) Ds-plasmid
(D) All of these

134. The cell which contains all the genetic potential of the organism is called

(A) Semi-potent
(B) Omnipotent
(C) Totipotent
(D) Complete cell

135. Who formulated the laws to explain the phenomenon of inheritance?

(A) Gregor Johann Mendel
(B) Jean Baptiste de Lamark
(C) Charles Darwin
(D) de Vries

136. Which of the following tolerates higher ethanol concentration during fermentation?

(A) *Sacchromyces cerevisease*
(B) Zymomonas
(C) *E.coli*
(D) TMV

137. Transposon tagging is used to

(A) Isolate a gene
(B) Elucidate the sequence of genes
(C) Isolate a transposing element
(D) Characterise the encoded genes

138. Bordeaux mixture is used as a

(A) Fertilizer
(B) Insecticide
(C) Fungicide
(D) Germicide

139. The process of double fertilization is unique to

(A) Angiosperms
(B) Gymnosperms
(C) Cycads
(D) Coconut

140. Guava belongs to

(A) Myrtaceae
(B) Mimoseae
(C) Malvaceae
(D) Euphorbiaceae

141. Which of the following is a short day plant?

(A) Chrysanthemum
(B) Tomato
(C) Corn
(D) Tea

142. Which one is a C4 plant?

(A) Pea
(B) Sugarcane
(C) Rice
(D) Mustard

143. The Tropical Botanical Garden and Research Institute is located in

(A) Ahmadabad
(B) Mumbai
(C) Malampuzha
(D) Thiruvananthapuram

144. The bio-synthesis of chlorophyll *a* is initiated when succinyl CoA reacts with

(A) Methionine
(B) Arginine
(C) Adenine
(D) Glycine

145. The branches arise due to the growth of

(A) Axillary buds
(B) Accessory buds
(C) Axillary buds and accessory buds
(D) Terminal buds

146. The most important use of potassium is that

(A) It provides red colour to fruits
(B) It aids in photosynthesis
(C) It influences enzymatic activity which regulates plant processes
(D) It helps in the formation of the cambium

147. The first reaction in photosynthesis is

(A) To excite chlorophyll
(B) To allow carbon-dioxide to enter the leaf
(C) To break the water molecule
(D) None of these

148. Tropical plants like sugarcane show high efficiency of carbon-dioxide fixation because of

(A) Calvin cycle
(B) EMP pathway
(C) Hatch-Slack cycle
(D) TCA cycle

149. Which of the following is an insectivorous plant?

(A) *Cuscuta*
(B) *Orobranche*
(C) *Drosera*
(D) *Rafflesia*

150. The enzyme responsible for the atmospheric nitrogen fixation is

(A) Nitrogenase
(B) Nitrate reductase
(C) Glutamine synthetase
(D) Glutamate dehydrogenase

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SPACE FOR ROUGH WORK

SEAL