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TEST BOOKLET

Sl. No: 0529

Subject Code: 02

Subject: BOTANY

WRITTEN TEST FOR RECRUITMENT OF POST GRADUATE TEACHERS FOR NON-GOVT. AIDED HIGHER SECONDARY SCHOOLS OF ODISHA

Time Allowed : 2 Hours

Maximum Marks: 150

: INSTRUCTIONS TO CANDIDATES:

1. **IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET CONTAINS 16 PAGES AND DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.**

2. You have to enter your **Roll No.** on the Test Booklet in the Box provided alongside. **DO NOT** write anything else on the Test Booklet.

3. The Test Booklet contains **100** questions. Each question comprises four options. You have to select the correct answer which you want to mark (darken) on the OMR Answer Sheet. In any case, choose ONLY ONE answer for each question. If more than one answer is darkened, it will be considered wrong.

4. You have to mark (darken) all your answers only on the **OMR Answer Sheet using BLACK BALL POINT PEN** provided by the State Selection Board. You have to do rough work only in the space provided at the end of the Test Booklet. See instructions in the OMR Answer Sheet.

5. All questions carry equal marks. While **1.5** marks will be awarded for each correct answer, each wrong answer will result in negative marking of **0.50** mark.

6. Before you proceed to mark (darken) the answers in the OMR Answer Sheet to the questions in the Test Booklet, you have to fill in some particulars in the OMR Answer Sheet as per the instructions in your Admit Card.

7. On completion of the Examination, you should hand over the **original copy of OMR Answer Sheet** issued to you to the Invigilator before leaving the Examination Hall. You are allowed to take with you the candidate's copy (second copy) of the OMR Answer Sheet along with the Test Booklet for your reference.

Candidate's full signature

Invigilator's signature

P.T.O.

1. Sitosterol is predominant in:

(A) Chlorophyceae (B) Chrysophyceae

(C) Bacillariophyceae (D) Rhodophyceae

2. Typically, *Coleochaete* shows a_____ habit:

(A) Siphonaceous (B) Parenchymatous

(C) Heterotrichous (D) Filamentous

3. Which one of the following is not a source of alginate?

(A) *Laminaria* (B) *Chara*

(C) *Lessonia* (D) *Fucus*

4. Cell wall of which of the following is most similar to that of Gramnegative bacteria?

(A) *Anabaena* (B) *Chlamydomonas*

(C) *Volvox* (D) *Spirogyra*

5. Polar nodule is seen in:

(A) Akinetes (B) Endospores

(C) Heterocysts (D) Aplanospores

6. The reserve food material in case of fungi is:

(A) Starch (B) Glycogen

(C) Cellulose (D) Pectin

7. Ergotamine, a mycotoxin, is produced by:

(A) *Claviceps* (B) *Rhizopus*

(C) *Mucor* (D) *Saccharomyces*

8. *Caloplaca* is a _____ type of lichen.

(A) Foliose (B) Fruticose

(C) Leprose (D) Crustose

9. The most common vegetative propagatory bud in lichens is:

(A) Isidia (B) Soredia

(C) Cephalodia (D) Pycnidia

10. Which of the following diseases is caused by *Phytophthora*?

(A) Smut (B) Rust

(C) Late blight (D) Mildew

11. Citrus canker disease is caused by _____.

(A) *Pseudomonas* (B) *Xanthomonas*

(C) *Aeromonas* (D) *Agromonas*

12. Bryophytes resemble green algae in having_____ in their chloroplasts.

(A) Starch grains (B) Oil droplets

(C) Pyrenoids (D) Lamellae

13. The archegoniophore of which one of the following shows rows of archegonia hanging downwards?

(A) *Funaria* (B) *Sphagnum*

(C) *Riccia* (D) *Marchantia*

14. The thalli of some bryophytes are colonized by :

(A) *Nostoc* (B) *Chlamydomonas*

(C) *Volvox* (D) *Rivularia*

15. Which one of the following is commonly known as spike moss?

(A) *Sphagnum* (B) *Psilotum*

(C) *Selaginella* (D) *Marsilea*

16. Which one of the following does not contain pith?

(A) Mixed protostele (B) Amphiphloic siphonostele

(C) Amphiphloic solenostele (D) Ectophloic solenostele

17. The predominant component of xylem in Pteridophytes is :

(A) Vessels (B) Tracheids

(C) Fibres (D) Parenchyma

18. Amongst the following, circinate vernation is more commonly found in :

(A) *Cycas* (B) *Pinus*

(C) *Ginkgo* (D) *Gnetum*

19. Which of the following is not a difference between Gymnosperms and Pteridophytes?

(A) Eustelic organisation

(B) Megasporangium protected by integument

(C) Seed formation

(D) Heterologous type of alternation of generations

20. Which one of the following is a unique feature of Gymnosperms?

(A) Naked seeds (B) Branched stem

(C) Presence of stele (D) Xerophytic habit

21. Hornworts are:

(A) Bryophytes (B) Pteridophytes

(C) Gymnosperms (D) Angiosperms

22. In Pteridophytes, a strobilus is primarily related to:

(A) Vegetative propagation (B) Asexual reproduction

(C) Sexual reproduction (D) Anchorage

23. The sub-terranean, horizontally growing modified stem, as in *Zingiber*, is called:

(A) Rhizome (B) Tuber

(C) Corm (D) Bulb

24. The swollen adventitious roots, as in *Asparagus*, are called _____ roots:

(A) Beaded (B) Moniliform

(C) Nodulose (D) Fasciculated

25. Which one is not a type of venation of leaves?

(A) Parallel unicostate convergent (B) Parallel multicostate divergent

(C) Reticulate convergent (D) Reticulate divergent

26. A spike-type inflorescence with thick and fleshy axis surrounded by one or more brightly coloured fleshy bracts, as in Banana, is called:

(A) Strobile (B) Catkin

(C) Spadix (D) Corymb

27. Which of the following is not a type of aestivation?

(A) Valvate (B) Colpate

(C) Twisted (D) Imbricate

28. In a floral formula, represents:

(A) Absence of gynoecium (B) Hypogynous condition

(C) Epigynous condition (D) Perigynous condition

29. Which is not a characteristic feature of Brassicaceae (Cruciferae)?

(A) Racemose inflorescence (B) Polypetalous condition

(C) Stamens are of equal length (D) Bicarpellary

30. Which one is not a characteristic feature of Malvaceae?

(A) Solitary flower (B) Alternate leaves

(C) Staminal tube present (D) Monocarpellary

31. Which one is not a characteristic feature of Fabaceae?

(A) Leaflets may be modified into tendrils (B) Fruit is a legume

(C) Stamens are monadelphous (D) Ovary superior

32. The term 'distichous' refers to a type of :

(A) Phyllotaxy (B) Venation

(C) Arrangement of flowers (D) Grouping of stamens

33. Root hairs are extension of _____ cells.

(A) Cortex (B) Pericycle

(C) Stele (D) Epiblema

34. Which one is not a characteristic of monocot stem?

(A) Generally collenchymatous hypodermis (B) Parenchymatous ground tissue

(C) Closed vascular bundles (D) Undifferentiated pith

35. Which of the following is not included under Periderm?

(A) Phellogen (B) Phellem

(C) Bark (D) Phelloderm

36. Which one of the following is not a feature of dicot leaf?

(A) Dorsiventral

(B) Stomata are unequally distributed on the two epidermises

(C) Parenchymatous bundle sheath cells

(D) Bulliform cells present

37. A specially formed cambium called 'secondary thickening meristem' is found in :

(A) *Dracaena* stem (B) *Amaranthus* stem

(C) *Mirabilis* stem (D) *Chenopodium* stem

38. Which one of the following has a monosporic embryo sac?

(A) *Allium* (B) *Endymion*

(C) *Plumbago* (D) *Oenothera*

39. Generative cell is found during:

(A) Formation of ovule (B) Formation of Embryo sac

(C) Microgametogenesis (D) Megagametogenesis

40. In case of Angiosperms, NPC system of classification deals with:

(A) Megaspores (B) Microspores

(C) Synergids (D) Antipodals

41. Which one of the following is not a type of entry of pollen tube into the ovule?

(A) Microgamy (B) Porogamy

(C) Mesogamy (D) Chalazogamy

42. Absence of free-nuclear stage is a characteristic of which type of endosperm?

(A) Nuclear (B) Cellular

(C) Helobial (D) Ruminate

43. Scutellum is an embryonic:

(A) Cotyledon (B) Root

(C) Axis (D) Haustorium

44. Based on photo-periodic response, which of the following is not a type of plant?

(A) Short-day plants (B) Long-day plants

(C) Day-neutral plants (D) Day-responsive plants

45. Based on nature of substratum, the plants are categorized into different types. Which of the following is not one of those?

(A) Saprophytes (B) Oxylophytes

(C) Psammophytes (D) Chasmophytes

46. Sclerophyllous leaves are mostly found in case of :

(A) Hydrophytes (B) Mesophytes

(C) Xerophytes (D) Epiphytes

47. Generally, energy flow in ecosystem follows a _____ percent rule.

(A) 5 (B) 10

(C) 15 (D) 20

48. Which one of the following is not a stage in xerosere?

(A) Herbaceous stage (B) Crustose Lichen stage

(C) Sedge Meadow stage (D) Moss stage

49. Which one of the following is a common air pollutant?

(A) Oxides of magnesium (B) Oxides of nitrogen

(C) Oxides of manganese (D) Oxides of zinc

50. Ozone layer in the atmosphere protects us from _____of the Sun.

(A) X-rays (B) Beta rays

(C) Gamma rays (D) UV rays

51. What are viroids?

(A) Viruses without protein coat (B) Viruses without nucleic acid

(C) Viruses without lipid (D) Viruses without polyamines

52. Tobacco mosaic virus has a _____symmetry .

(A) Cubical (B) Cylindrical

(C) Helical (D) Complex

53. During viral multiplication, the period during which no phage particle can be detected in the host cell is called _____period.

(A) Latent (B) Lytic

(C) Lysogenic (D) Eclipse

54. Which one is not a feature of lysogeny?

(A) More common in non-virulent phages (B) Less frequent

(C) Takes longer time than lysis (D) No integration of genomes occur

55. Archaea are not:

(A) Fermentative (B) Methanogenic

(C) Halophilic (D) Thermophilic

56. Archaea do not contain_____ in their cell wall.

(A) Protein (B) Peptidoglycan

(C) Lipids (D) Methanochondroitin

57. Bacterial cells are devoid of:

(A) Histone protein (B) Flagellin protein

(C) Slime layer (D) ATP Synthase

58. Which one of the following is not true for Gram positive bacteria?

(A) Cell wall is thicker than that of Gram-negative bacteria

(B) NAG & NAM are tightly linked

(C) Appear red after Gram staining

(D) Teichoic acid is the main surface antigen

59. Which of the following was used byF. Griffith for his transformation experiment?

(A) *Bacillus* (B) *Haemophilus*

(C) *Streptococcus* (D) *Spirochetes*

60. Which is not a donor in bacterial conjugation?

(A) F^+ cell (B) F^- cell

(C) Hfr cell (D) F'– cell

61. Felice Fontana had significant contribution towards the study of :

(A) Cell wall (B) Cell membrane

(C) Chromosome (D) Nucleolus

62. The Peptidoglycan, present in bacterial cell wall, contains:

(A) NAG (B) NAG and NAM

(C) NAG, NAM and Polypeptide (D) NAG, NAM, Polypeptide and sterols

63. Free DNA fragments from the surrounding medium are taken up by competent bacterial cells during:

(A) Conjugation (B) Transformation

(C) Transduction (D) Sex-duction

64. Which of the following is not a feature of the plasma membrane?

(A) Asymmetrical structure

(B) Carbohydrates present on the inner face

(C) Contains integral proteins

(D) Lipid bilayer

65. The major component of cell wall of plants is :

(A) Starch (B) Calcium

(C) Glycogen (D) Cellulose

66. F_1 particles are found in :

(A) Mitochondrial outer membrane (B) Nucleus

(C) Mitochondria (D) Cytoplasm

67. What is the major role of glyoxysomes?

(A) Glucose oxidation (B) Gluconeogenesis

(C) Carbon dioxide fixation (D) Glycolysis

68. Which one is not involved in photorespiration?

(A) Chloroplast (B) Perioxisomes

(C) Mitochondria (D) Golgi bodies

69. Nucleolus is the seat of _____ production.

(A) Nucleic acids (B) Ribosomes

(C) Nucleosomes (D) Chromosomes

70. Which one contains Cytoplasmic ring, Cytoplasmic filaments and FG repeats?

(A) Nuclear pore complex (B) Cytoplasmic membrane

(C) Cell wall (D) Giant chromosomes

71. Which one is not found in chromosome?

(A) Kinetochore (B) Kinetin

(C) Chromatin (D) Telomere

72. Which statement is least applicable to mitosis?

(A) Takes place in somatic cells (B) Crossing over usually occurs

(C) Results in two daughter cells (D) Shorter duration than meiosis

73. In meiosis, which stage is called bouquet-stage?

(A) Leptotene (B) Zygotene

(C) Pachytene (D) Diplotene

74. In cell cycle, which phase is the longest?

(A) M (B) G1

(C) S (D) G2

75. Which of the following is incorrect regarding meiosis?

(A) In meiosis-I, chromosome number is reduced to half

(B) Desynapsis takes in anaphase-II

(C) Chiasmata dissolve in anaphase-I

(D) DNA content is reduced to half in meiosis-II

76. What is Mendel's dihybrid genotypic ratio?

(A) 1:2:1: 2:4:2: 1:2:1 (B) 1:2:1: 4:2:2: 1:2:1

(C) 1:2:1: 2:2:4: 1:2:1 (D) 1:2:1: 4:2:4: 1:2:1

77. The ratio 9:3:4 is the result of:

(A) Complementary factor (B) Supplementary factor

(C) Inhibitory factor (D) Duplicate factor

78. A _____ cross over in pericentric inversion does not produce acentric chromatids.

(A) Single (B) Double

(C) Multiple (D) Variable

79. Corren's experiment regarding cytoplasmic inheritance in *Mirabilis jalapa* involved:

(A) Mitochondria (B) Cytoplasm

(C) Nucleus (D) Plastids

80. Which one is least correct with reference to mutations?

(A) Generally, mutants are recessive

(B) More often, mutations have harmful effects

(C) Mutations occur at low frequencies in nature

(D) Genes showing high rates of spontaneous mutations are called mutator genes

81. Diethyl sulphate is a mutagen under:

(A) Alkylating agents (B) Ionising agents

(C) Deaminating agents (D) Dyes

82. Aneuploidy does not include –

(A) Monosomy (B) Disomy

(C) Trisomy (D) Tetrasomy

83. The most useful effect of polyploidy in crop improvement has been in case of :

(A) Watermelons (B) Sugarbeets

(C) Wheat (D) Cabbage

84. Whose experiments led to universal acceptance of DNA as genetic material?

(A) Experiment by F. Griffith

(B) Experiment by Avery, Mc Leod and Mc Carty

(C) Experiment by Hershey and Chase

(D) Experiment by Mendel

85. A total number of how many codons specify amino acids?

(A) 20 (B) 22

(C) 64 (D) 61

86. The DNA that shows left-handed coiling, contains 12 base pairs per turn and has a helix diameter 18 A^0 is known as _____ of DNA.

(A) A form (B) B form

(C) C form (D) Z form

87. Nucleic acid is a polymer of:

(A) Nucleosides (B) Nucleotides

(C) Nucleosides and amino acids (D) Nucleotides and phosphates

88. The DNA sequence of a prokaryotic gene that determines where transcription to begin with is called:

(A) TATA box (B) GC box

(C) CAAT box (D) Decoder box

89. Which of the following is not an event relating to post-transcriptional modification in eukaryotes?

(A) Removal of exons

(B) Deformylation of f-Met

(C) Addition of 7-methyl guanosine (7mG) cap at 5' terminus

(D) Polyadenylation

90. The peptidyl transferase activity is the function of:

(A) The 23S RNA of prokaryotes (B) The 23S RNA of eukaryotes

(C) The 16S RNA of eukaryotes (D) The 18S RNA of eukaryotes

91. In *lac* operon, active CAP binds to the promoter in the presence of -

(A) Cyclic GMP (B) Cyclic AMP

(C) Cyclic ATP (D) Cyclic Nucleotide

92. Which transgene is inserted into Bt-cotton plant?

(A) *Cry* genes (B) *Cor* genes

(C) *Bar* genes (D) GNA genes

93. Which one of the following is not a photosynthetic pigment ?

(A) Phycobilin (B) Laminarin

(C) Carotene (D) Xanthophyll

94. Which of the following is not a diazotroph?

(A) *E. coli* (B) *Azotobacter*

(C) *Azospirillum* (D) *Rhizobium*

95. Which oneof the following is not a method of gene transfer?

(A) Microinjection (B) Direct DNA injection

(C) Macroinjection (D) Gene gun

96. Which of the following is not a step in the process of tissue culture?

(A) Hardening (B) Grafting

(C) Incubation (D) Regeneration

97. Which one of the following is not formed during TCA cycle?

(A) Carbon dioxide (B) GTP

(C) Acetyl CoA (D) $FADH_2$

98. Which oneof the following is not a natural cytokinin?

(A) Kinetin (B) Trans-zeatin

(C) Dihydrozeatin (D) Cis-zeatin

99. Some integral membrane proteins which form water-specific pores across the membrane are called:

(A) Aquaproteins (B) Hydroproteins

(C) Aquaporins (D) Extrinsic proteins

100. In enzyme kinetics, K_m denotes :

(A) Enzyme concentration (B) Substrate concentration

(C) Rate of reaction (D) Rate of dissociation of ES complex

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