

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

23-0009-AF

TEST BOOKLET

BOTANY

PAPER - I

Time Allowed: 3 hours

Maximum Marks: 300

INSTRUCTIONS TO CANDIDATES

Read the instructions carefully before answering the questions: -

1. This Test Booklet consists of 16(sixteen) pages and has 75 (seventy-five) items (questions).
2. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET *DOES NOT* HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
3. Please note that it is the candidate's responsibility to fill in the Roll Number and other required details carefully and without any omission or discrepancy at the appropriate places in the OMR Answer Sheet and the Separate Answer Booklet. Any omission/discrepancy will render the OMR Answer Sheet and the Separate Answer Booklet liable for rejection.
4. Do not write anything else on the OMR Answer Sheet except the required information. Before you proceed to mark in the OMR Answer Sheet, please ensure that you have filled in the required particulars as per given instructions.
5. Use only Black Ball Point Pen to fill the OMR Answer Sheet.
6. This Test Booklet is divided into 4 (four) parts - Part - I, Part - II, Part - III and Part - IV.
7. All three parts are Compulsory.
8. Part-I consists of Multiple Choice-based Questions. The answers to these questions have to be marked in the OMR Answer Sheet provided to you.
9. Part-II, Part-III and Part-IV consist of Conventional Essay-type Questions. The answers to these questions have to be written in the separate Answer Booklet provided to you.
10. In Part-I, each item (question) comprises of 04 (four) responses (answers). You are required to select the response which you want to mark on the OMR 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.
11. After you have completed filling in all your responses on the OMR Answer Sheet and the Answer Booklet(s) and the examination has concluded, you should hand over to the Invigilator *only the OMR Answer Sheet and the Answer Booklet(s)*. You are permitted to take the Test Booklet with you.
12. **Penalty for wrong answers in Multiple Choice-based Questions:**
THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE.
 - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, one-third of the marks assigned to the question will be deducted as penalty.
 - (ii) If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above to the question.
 - (iii) If a question is left blank. i.e., no answer is given by the candidate, there will be no penalty for that question.

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PART - I
(Multiple Choice-based Questions)

Instruction for Questions 1 to 50:

- **Choose the correct answers for the following questions.**
- **Each question carries 3 marks**

[3x50=150]

1. Which of the following about bacteriophage with a lysogenic cycle is *true*?

- (a) It must have genes that are made up of RNA
- (b) It must have genes that are made up of double stranded DNA
- (c) It must have genes that are made up of single stranded DNA
- (d) It must have genes that are within a circular nucleic acid molecule

2. Which of these is the genus of water mold?

- (a) Saprolegnia
- (b) Agaricus
- (c) Synchytrium
- (d) Ustilago

3. Which of the following statements is *correct* about a virion?

- (A) A virion is a fully developed virus particle
- (B) A virion is a capsid
- (C) A virion is a capsomere

Codes:

- (a) Only A
- (b) Only B
- (c) Both A and B
- (d) Both A and C

4. Which type of placentation is found in *pisum sativum*?

- (a) Marginal
- (b) Axial
- (c) Basal
- (d) Parietal

5. Bract scale of *pinus* is a part of-

- (a) Ovule
- (b) Megasporophyll
- (c) Dwarf shoot
- (d) Microsporophyll

6. Which type of fruit is found in *Catharanthus*?
- (a) Pome
 - (b) Follicle
 - (c) Legume
 - (d) Siliqua
7. Which of the statements about Creutzfeldt -Jakob disease in human beings is true?
- (a) It is caused by Virus
 - (b) It is caused by Bacteria
 - (c) Prion proteins are the cause of the disease
 - (d) Mycoplasmas cause the disease
8. The new alternative name for family umbellifereae is –
- (a) Poaceae
 - (b) Asteraceae
 - (c) Apiaceae
 - (d) Clusiaceae
9. Who among the following propounded the phylogenetic classification?
- (a) Bentham & Hooker
 - (b) Engler and Prantl
 - (c) Carolus Linnaeus
 - (d) Michael Adanson
10. The author of 'Genera Planatarum' is -
- (a) Carl Linnaeus
 - (b) Engler and Prantl
 - (c) Bentham & Hooker
 - (d) Tournefort
11. Brassicaceae family belongs to which of the following orders?
- (a) Ranales
 - (b) Parietales
 - (c) Geraniales
 - (d) Olacales
12. The flowers in series inferae are -
- (a) Epigynous
 - (b) Hypogynous
 - (c) Perigynous
 - (d) None of the above

13. Cyathium is the characteristic inflorescence of which of the following families?
- (a) Ranunculaceae
 - (b) Apiaceae
 - (c) Euphorbiaceae
 - (d) Solanaceae
14. When DNA is exchanged via cytoplasmic bridges between two bacteria, the process is called-
- (a) General transduction
 - (b) Restricted transduction
 - (c) Transformation
 - (d) Conjugation
15. In which genus is Gynostegium present?
- (a) Calotropis
 - (b) Liliium
 - (c) Ruscus
 - (d) Mangifera
16. What type of bacteria are mycoplasmas?
- (a) Thick- walled bacteria
 - (b) Thin walled bacteria
 - (c) Thick walled cyanobacteria
 - (d) Cell wall less bacteria
17. Choose the example of cauline steam from the options given below: -
- (a) Nerium
 - (b) Mangifera
 - (c) Phoenix
 - (d) Bombax
18. In which family is caruncal present?
- (a) Brassicaceae
 - (b) Lamiaceae
 - (c) Euphorbiaceae
 - (d) Malvaceae
19. Cocos nucifera is an example of which type of endosperm?
- (a) Cellular
 - (b) Nuclear
 - (c) Helobial
 - (d) None of the above

20. The centre of origin of *triticum aestivum* is -
- (a) North America
 - (b) South America
 - (c) Central Asia
 - (d) Brazil
21. The functional components of an ecosystem are -
- (a) Inorganic constituents
 - (b) Organisms
 - (c) Energy
 - (d) All of above
22. From which of the following is ergotamine obtained?
- (a) *Rhizopus nigricans*
 - (b) *Penicillium notatum*
 - (c) *Saccharomyces cerevisiae*
 - (d) *Claviceps purpurea*
23. Which of the following is commonly known as '*pond silk*'?
- (a) *Ulothrix*
 - (b) *Spirogyra*
 - (c) *Chara*
 - (d) *Batrachospermum*
24. Which alga causes 'Red rust of tea'?
- (a) *Ectocarpus*
 - (b) *Chara*
 - (c) *Cephaleuros*
 - (d) *Sargassum*
25. Reserved food material in rodophyceae is-
- (a) Laminarin
 - (b) Floridian starch
 - (c) Cynophycean starch
 - (d) Oil
26. According to Vavilov 85% plants originated in -
- (a) Water
 - (b) Plains
 - (c) Hilly region
 - (d) None of the above

27. Sexual reproduction is absent in which of the following?

- (a) Phycomycetes
- (b) Ascomycetes
- (c) Deuteromycetes
- (d) Basidiomycetes

28. The fruiting body of eurotium is known as -

- (a) Apothecium
- (b) Perithecium
- (c) Stroma
- (d) Cleistothecium

29. What is the causal organism of early blight of potato?

- (a) Synchytriumendobioticum
- (b) Cystopuscandidus
- (c) Alternaria solani
- (d) Albugo candida

30. Female gametangium of a bryophyte differs from that of a fungus in possessing -

- (a) A large neck
- (b) A single egg cell
- (c) Jacket layer of sterile cells
- (d) A venter

31. Retort cells are found in-

- (a) Pellia
- (b) Sphagnum
- (c) Porella
- (d) Pogonatum

32. Which one of the following statements is not correct for bryophytes?

- (a) They are photosynthetic
- (b) They lack tracheids and vessels
- (c) Their zygote undergoes meiosis and then produces the sporophyte
- (d) Their spores germinate and produces gametophyte

33. Which of the following is a tree fern?

- (a) Lygodium
- (b) Marsilea
- (c) Schizaea
- (d) Adiantum

34. Mixed sorus is observed in-

- (a) Selaginella
- (b) Ophioglossum
- (c) Marsilea
- (d) Adiantum

35. In a fern genus the suffix 'Carpon' signifies the name of a -

- (a) Seed
- (b) Cone
- (c) Microsporangia
- (d) Stem

36. Palaeo botanical studies are not helpful in -

- (a) Establishing the phylogeny of plant groups
- (b) In exploration of fossil fuel
- (c) In forecasting the climatic changes
- (d) In the study of the vegetation of the geological past

37. The gametophyte of Psilotum is -

- (a) Dioecious
- (b) Endoscopic
- (c) Endosporic
- (d) Exosporic

38. A Stele without a central pith is called in Pteridophytes -

- (a) Dictyostele
- (b) Solenostele
- (c) Protostele
- (d) Siphonostele

39. Ephedra is-

- (a) Dioecious
- (b) Monoecious
- (c) Usually dioecious occasionally monoecious
- (d) Usually monoecious occasionally dioecious

40. In which periods were gymnosperms present in the form of dominant vegetation?

- (a) Triassic and Jurassic
- (b) Jurassic and Cretaceous
- (c) Triassic and Cretaceous
- (d) None of the above

41. Cycadeoidea was the dominant flora of -
- (a) Coenozoic era
 - (b) Archaeozoic era
 - (c) Palaeozoic era
 - (d) Mesozoic era
42. Internal structures are best preserved in which fossils?
- (a) Petrifications
 - (b) Compressions
 - (c) Incrustations
 - (d) Impressions
43. Gnetum trinerve is a-
- (a) Saprophyte
 - (b) Parasite
 - (c) Tree
 - (d) Shrub
44. Which of the following species of Pinus is commonly known as 'chir pine'?
- (a) P. insularis
 - (b) P. gerardiana
 - (c) P. roxburghii
 - (d) P. wallichiana
45. Which bacteriologist was credited with discovering transformation in Streptococcus pneumoniae?
- (a) Lederberg and Tatum
 - (b) Watson and Crick
 - (c) Griffith Frederick
 - (d) Zinder and Lederberg
46. 'Taxol' drug is obtained from which Gymnosperm?
- (a) Cycas
 - (b) Taxus
 - (c) Gnetum
 - (d) Ephedra
47. The centre of origin of 'cinchona' is-
- (a) India
 - (b) South America
 - (c) England
 - (d) South Africa

48. 'Rasarpine' is obtained from which medicinal plant?

- (a) Rauwolfia
- (b) Withania
- (c) Cinchona
- (d) All of the above

49. Who is the father of tissue culture?

- (a) Gautheret
- (b) Haberlandt
- (c) Bonner
- (d) None of the above

50. Cybrids are produced by -

- (a) The fusion of two same nuclei from the same species
- (b) The nucleus of one species but cytoplasm from both the parent species
- (c) The fusion of two different nuclei from different species
- (d) None of the above

PART-II
(Short Answer-type Questions)

Instructions for Questions 51 to 63:

- ***Write the answers in short for any 10 (TEN) out of the thirteen questions.***
 - ***Each question carries 5 marks.*** ***[5x10=50]***
51. Describe the disease symptoms, causal organism, and disease control of 'Red rot of Sugarcane'.
52. Write in brief about the application of microbiology in dairy industry.
53. Describe the life cycle of Volvox through diagrammatic representation.
54. Explain the development and structure of sporophyte of Marchantia.
55. Write a short note on hyper parasitism in plant pathology.
56. Give an outline of the classification of pteridophytes with reference to Riemer's classification.
57. Define coal balls.
58. Write about any five similarities between Gymnosperms and Pteridophytes.
59. Explain the development of microsporangium in Pinus.
60. Define free central placentation.
61. Write short notes on androecium and gynoecium in Malvaceae.
62. Explain the types of ovules in Angiosperms.
63. Describe apomixis.

PART-III
(Long Answer-type Questions)

Instructions for Questions 64 to 71:

- *Answer any 5 (FIVE) out of the eight questions.*
- *Each question carries 10 marks.*

[10x5=50]

64. Discuss the structure of mycoplasma.
65. Write about economic importance of algae.
66. How many types of lichens are found on basis of their external morphology? Explain them.
67. Give the explanation of asexual reproduction in ectocarpus with suitable diagrams.
68. Explain in detail about white rust of crucifers.
69. Define general characteristics of Hepaticopsida.
70. Write about the economic importance of Gymnosperms.
71. Give the vegetative and reproductive description of family Solanaceae.

PART-IV
(Essay-type Questions)

Instructions for Questions 72 to 75:

- *Answer any 2 (TWO) out of the four questions.*
- *Each question carries 25 marks*

[25x2= 50]

72. Explain the genetic recombination or sexual reproduction in bacteria with its types.
73. Describe the main outline, merits and demerits of the classification system proposed by Bentham and Hooker.
74. Describe the distribution of Gymnosperms in North East India with special reference to Sikkim.
75. Explain in detail about the origin centres of cultivated plants according to Vavilov.
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