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Part III — BOTANY

(English Version)

Time Allowed : 3 Hours]

[Maximum Marks : 150

SECTION - A

Note : i) Answer all the questions.

ii) Choose and write the correct answer. $30 \times 1 = 30$

- 'Abaca cloth' is obtained from the plant
 - Musa chinensis*
 - Ravenala*
 - Gossypium*
 - Musa textilis*.
- In *Corypha umbraculifera*, the spadix measures about
 - 5 metres
 - 10 metres
 - 1 metre
 - 2 metres.
- Due to presence of which cells is the pulp of *Pyrus* fruit hard ?
 - Brachysclereids
 - Macrosclereids
 - Osteosclereids
 - Asterosclereids.
- Bicollateral vascular bundles are typically seen in
 - Malvaceae
 - Solanaceae
 - Musaceae
 - Cucurbitaceae.

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5. Protoxylem lacuna is found in

- | | |
|---------------|------------------|
| a) Dicot stem | b) Monocot stem. |
| c) Dicot root | d) Monocot root. |

6. Nullisomy is represented by

- | | |
|-------------|---------------|
| a) $2n + 2$ | b) $2n + 1$ |
| c) $2n - 2$ | d) $2n - 1$. |

7. The drug used to treat diabetes is

- | | |
|---------------|-------------|
| a) Penicillin | b) Insulin |
| c) Bacitracin | d) Nicotin. |

8. Which one of the following processes is employed to introduce a foreign gene into a cell ?

- | | |
|-----------------|---------------------|
| a) Electrolysis | b) Conjugation |
| c) Osmosis | d) Gene gun method. |

9. The two protoplasts are fused with a fusogen called

- | | |
|------------------------|--------------------------|
| a) Polyethylene glycol | b) Polyvinyl chloride |
| c) Polysaccharide | d) Phosphoglyceric acid. |

10. An example of enzyme inhibitor is

- | | |
|--------------|----------------|
| a) Cyanide | b) Mn^{2+} |
| c) Mg^{2+} | d) NAD^{+} . |

11. The chemical used in the field to eradicate weeds is

- | | |
|--------|-----------|
| a) IAA | b) 2, 4-D |
| c) ABA | d) Urea. |

3.

12. 'Foolish seedling' disease in paddy is caused by
- a) Auxin
 - b) Gibberellin
 - c) Abscisic acid
 - d) Ethylene.
13. The plant, which produces a protein that is 100 times as sweet as sugar is
- a) *Pentadiplandra brazzeana*
 - b) *Ravenala madagascariensis*
 - c) *Cissus quadrangularis*
 - d) *Lathyrus odoratus*.
14. *Xanthomonas citri* causes
- a) Tungro disease of rice
 - b) Blast disease
 - c) Citrus canker
 - d) Tikka disease of groundnut.
15. The common name of '*Arachis hypogea*' is
- a) Groundnut
 - b) Vilvum
 - c) Pirandai
 - d) Avarai.
16. Who introduced binomial system ?
- a) Adolf Engler
 - b) Gaspard Bauhin
 - c) Carolus Linnaeus
 - d) Charles Darwin.
17. Naked seeded plants are
- a) Gymnosperms
 - b) Angiosperms
 - c) Bryophytes
 - d) Fungi.

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18. In *Ixora coccinea* the phyllotaxy is
- a) whorled
 - b) spiral
 - c) opposite decussate
 - d) alternate.
19. Asteraceae family is placed under the series
- a) Bicarpellatae
 - b) Thalamiflorae
 - c) Calciflorae
 - d) Inferae.
20. Epicalyx is present in
- a) *Hibiscus*
 - b) *Musa*
 - c) *Pisum*
 - d) *Helianthus*.
21. The cells responsible for curling and uncoiling in leaf are
- a) Bulliform cells
 - b) Passage cells
 - c) Silica cells
 - d) Companion cells.
22. The term 'Alburnam' refers to
- a) Heartwood
 - b) Tyloses
 - c) Sapwood
 - d) Periderm.
23. Which chromosome occurs in cancer cells ?
- a) B-chromosome
 - b) Polytene chromosome
 - c) Lampbrush chromosome
 - d) Double minutes chromosome.

24. The functions of 30,000 to 40,000 genes were seen in
- a) Man
 - b) Chimpanzee
 - c) Whale
 - d) Banyan tree.
25. Bio-chemical mutation has been reported in
- a) Sorghum
 - b) *Neurospora*
 - c) *Gibberella*
 - d) *Penicillium*.
26. The essential component for the formation of chlorophyll is
- a) Calcium
 - b) Potassium
 - c) Copper
 - d) Magnesium.
27. Which of the following wavelengths of light is most effective for photosynthesis ?
- a) 100 nm - 200 nm
 - b) 400 nm - 700 nm
 - c) 200 nm - 300 nm
 - d) 700 nm - 900 nm.
28. The plant that is commonly known as Sundew plant is
- a) *Drosera*
 - b) *Nepenthes*
 - c) *Utricularia*
 - d) *Beggiatoa*.
29. Complete oxidation of one molecule of glucose yields
- a) 3 ATP
 - b) 8 ATP
 - c) 38 ATP
 - d) 2 ATP.
30. Respiratory quotient of glucose is
- a) 2
 - b) 0
 - c) 1
 - d) 1.33.

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SECTION - B*Note : Answer any fifteen questions.* $15 \times 3 = 45$

31. Define tautonym. Give an example.
32. What is Papilionaceous corolla ?
33. What is Pyrethrum ?
34. Describe the Perianth of musa.
35. What is a eustele ?
36. What are autosomes ?
37. Write any three significances of crossing over.
38. What are 'nonsense codons' ? Give example.
39. Mention three media of plant tissue culture.
40. What are isoenzymes ?
41. Write down any three differences between cyclic photophosphorylation and non-cyclic photophosphorylation.
42. Why is 'Single Cell Protein' (SCP) not popular for human consumption ?
43. What are total parasitic plants ? Give an example.
44. Why is Krebs' cycle described as 'amphibolic' process ?
45. What is compensation point ?

46. What is Sigmoid curve ?
47. What is Richmond-Lang effect ?
48. What is a short day plant ? Give an example.
49. Write any three aims of plant breeding.
50. Write a short note on medicinal importance of *Acalypha indica*.

SECTION - C

Note : i) Answer any *seven* questions including Question No. 55 which is compulsory.

ii) Draw diagrams wherever necessary. $7 \times 5 = 35$

51. Draw the outline of Bentham and Hooker's classification of plants.
52. Give an account of economic importance of Euphorbiaceae.
53. What are the different types of collenchyma ? Explain with diagram.
54. Describe the structure of periderm.
55. Draw and label the parts of a transverse section of a dicot leaf.
56. Draw and label the structure of transfer RNA.
57. Write the differences between DNA and RNA.
58. Give a brief account of herbicide resistance in transgenic plants.
59. Write any five outcomes of application of plant tissue culture.
60. Write the significance of Pentose phosphate pathway.
61. Explain the test-tube and funnel experiment.
62. Write an account on Bio-war.

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SECTION - D

Note : i) Answer any *four* questions.

ii) Draw diagrams wherever necessary.

4 × 10 = 40

63. a) Write a note on the method of preparation of herbarium briefly.
b) Bring out any five significances of herbarium.
64. Describe *Datura metal* in botanical terms. Draw floral diagram and write floral formula.
65. Describe the transverse section of a dicot root with a diagram.
66. Write an account on chromosomal aberrations on the basis of its structure.
67. Write an essay on DNA recombinant technology.
68. Explain two theories on the mode of action of enzyme.
69. What is Glycolysis ? Draw the flowchart of the process of Glycolysis.
70. Bring out the economic importance of cotton and teak.
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