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Part III — BOTANY

(New Syllabus)

(English Version)

Time Allowed : 3 Hours]

[Maximum Marks : 150

SECTION - A

Note : i) Answer *all* questions.

ii) Choose and write the correct answer.

iii) Each question carries one mark.

30 × 1 = 30

1. Solanaceae is placed under the order

- a) Malvales
- b) Polemoniales
- c) Unisexuales
- d) Ranales.

2. An example of cladode is

- a) Phyllanthus emblica
- b) Ricinus communis
- c) Jatropha curcus
- d) Euphorbia tirucalli.

3. The simple tissue generally present in all organs of the plant is

- a) xylem
- b) phloem
- c) parenchyma
- d) collenchyma.

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4. The outermost layer of root is
- endodermis
 - rhizodermis
 - cortex
 - pith.
5. Protoxylem lacuna is present in the vascular bundles of
- dicot root
 - monocot root
 - dicot stem
 - monocot stem.
6. Monosomy is represented by
- $2n - 1$
 - $2n - 2$
 - $2n + 1$
 - $2n + 2$.
7. The enzyme that is used to join two DNA fragments together is
- Restriction enzyme
 - DNA ligase
 - DNA polymerase
 - Deoxyribonuclease.
8. Mycoproteins are present in large quantities in
- bacteria
 - virus
 - yeast
 - chlorella.
9. Enriched vitamin tablets are produced from which of the following organisms for human consumption?
- Volvoriella
 - Agaricus
 - Pseudomonas
 - Spirulina.
10. Which one of the following is a C_3 plant?
- Maize
 - Sugarcane
 - Rice
 - Amaranthus.

11. The chemical used in the field to eradicate weeds is
- a) — NAA
b) ABA
c) 2, 4 D
d) PAA.
12. Photoperiodic response in flowering was first observed in
- a) Wheat
b) Maryland Mammoth
c) Oats
d) Chrysanthemum.
13. The pathogen which causes blast disease of rice is
- a) Tungro virus
b) Xanthomonas citrii
c) Pyricularia oryzae
d) Cercospora.
14. The plant which has the trade name 'Hadjor' (bone joiner) is
- a) Kuppaimeni
b) Vilvam
c) Thottal chinungi
d) Pirandai.
15. The plant which yields lint fibre in the textile industry is
- a) Cotton
b) Teak
c) Groundnut
d) Rice.
16. The botanist who introduced the binomial system is
- a) Carolus Linnaeus
b) Gaspard Bauhin
c) Sir Joseph Dalton Hooker
d) Adolf Engler.
17. Plants having flowers with free petals are placed under
- a) Monochlamydeae
b) Monocotyledons
c) Polypetalae
d) Gamopetalae.

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18. Epicalyx is seen in
- a) Fabaceae
 - b) Solanaceae
 - c) Malvaceae
 - d) Liliaceae.
19. The type of aestivation seen in the corolla of Fabaceae is
- a) valvate
 - b) descendingly imbricate
 - c) twisted
 - d) ascendingly imbricate.
20. A single seeded dry indehiscent fruit developing from an inferior ovary is called
- a) cypsela
 - b) berry
 - c) capsule
 - d) drupe.
21. The cell which is helpful for the mechanism of rolling and unrolling of the grass leaf according to the weather change is
- a) cambium
 - b) sclerenchyma
 - c) bulliform cells
 - d) meristematic cells.
22. Cork cambium is a / an
- a) apical meristem
 - b) intercalary meristem
 - c) promeristem
 - d) lateral meristem.
23. Polytene chromosomes were observed by
- a) Bridges
 - b) Balbiani
 - c) Waldeyer
 - d) Flemming.

24. Which is a physical and functional unit of heredity ?
- a) Chromosome b) Mitochondria
c) Gene d) Ribosome.
25. Hugo de Vries first used the term 'mutation' based on his observation on
- a) Sorghum
b) Neurospora
c) Oenothera lamarckiana
d) Cicer gigas.
26. The essential component for the formation of chlorophyll is
- a) Fe b) Mg
c) Cl d) Mn.
27. The gas evolved during photosynthesis is
- a) carbon dioxide b) nitrogen
c) hydrogen d) oxygen.
28. The primary pigment is
- a) chlorophyll *a* b) chlorophyll *b*
c) carotenoid d) xanthophyll.
29. Complete oxidation of one molecule of glucose yields
- a) 35 ATP b) 36 ATP
c) 38 ATP d) 40 ATP.
30. The energy currency of the cell is
- a) ATP b) NADP
c) FAM d) FAD.

SECTION - B

Note : i) Answer any fifteen questions.

ii) Each question carries three marks.

15 × 3 = 45

31. Define tautonym. Give an example.
32. What is pulvinus ? In which family is it present ?
33. What is pyrethrum ?
34. Write the systematic position of Liliaceae.
35. What are called passage cells ?
36. What is a genetic map ?
37. What is a lethal mutation ? Give an example.
38. List out three differences between DNA and RNA.
39. Give the binomials of three dicot transgenic plants.
40. Mention three media of plant tissue culture.
41. Define isoenzyme.
42. Write the overall equation of photosynthesis.
43. What is chemosynthesis ?
44. What is Glycolysis ?
45. Define respiratory quotient.
46. What is Richmond-Lang effect ?

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47. Define bolting.
48. What is devernalization ?
49. Bring out any three economic importances of rice.
50. What is humulin ?

SECTION - C

Note : i) Answer any seven questions including Question No. 51 which is compulsory.

ii) Each question carries five marks.

iii) Draw diagrams wherever necessary.

7 × 5 = 35

51. Bring out the significance of herbarium.
52. Write the economic importance of Arecaceae.
53. Explain different types of meristems based on their positions.
54. Draw the transverse section of dicot root and label the parts.
55. Write a short note on annual rings.
56. Draw the structure of tRNA and label the parts.
57. Write any five significances of mutation.
58. Give an account of five most important events of recombinant DNA technology.
59. What are the outcomes of application of plant tissue culture ?
60. Bring out the characteristics of enzymes.
61. Write a short note on insectivorous plant.
62. Bring out the economic importance of teak.

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SECTION - D

Note : i) Answer any *four* questions.

ii) Each question carries *ten* marks.

iii) Draw diagrams wherever necessary. 4 × 10 = 40

63. Write the outline of Bentham and Hooker's classification of plants and explain.
 64. Describe *Ixora coccinea* in botanical terms.
 65. Describe the secondary growth in dicot stem.
 66. Write an account on the structure of DNA.
 67. What will be the role of Single Cell Protein (SCP) to safeguard against human protein deficiency for the future ?
 68. Draw Calvin cycle without explanation.
 69. Write an account on photoperiodism and vernalization.
 70. Explain the role of biofertilizers to improve the soil fertility.
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