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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. Photosynthesis takes place in

- | | |
|-----------------|----------------|
| a) Mitochondria | b) Peroxisomes |
| c) Chloroplasts | d) Ribosomes. |

2. C₄ Pathway is otherwise known as

- a) EMP Pathway
- b) Hatch and Slack Pathway
- c) Photorespiration
- d) Electron transport chain.

3. Which of the following is a total parasite ?

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|------------|---------------|
| a) Cuscuta | b) Viscum |
| c) Drosera | d) Monotropa. |

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4. Ganong's respiroscope demonstrates the liberation of during respiration.
- a) oxygen
 - b) hydrogen
 - c) carbon dioxide
 - d) nitrogen.
5. TCA cycle was described by
- a) Sir Hans Krebs
 - b) Calvin
 - c) Kuhne
 - d) Buchner.
6. Isobilateral leaf is present in
- a) Cucurbita
 - b) Sunflower
 - c) Grass
 - d) Bean.
7. Vascular Bundle in the leaf is
- a) collateral and open
 - b) collateral and closed
 - c) bicollateral and open
 - d) radial and exarch.
8. The binomial of Sweet Pea is
- a) Lab lab purpureus
 - b) Arachis hypogea
 - c) Lathyrus odoratus
 - d) Pisum sativum.
9. $2n + 1$
- a) Monosomy
 - b) Nullisomy
 - c) Trisomy
 - d) Tetrasomy.
10. Adenine always pairs with
- a) Thymine
 - b) Cytosine
 - c) Guanine
 - d) Biliprotein.

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11. *Species plantarum* was written by

- a) Carolus Linnaeus
- b) Bentham and Hooker
- c) Charles Darwin
- d) Adolf Engler.

12. Trimerous flowers are seen in

- a) Gymnosperms
- b) Non-flowering plants
- c) Dicotyledons
- d) Monocotyledons.

13. *Aeschynomene aspera* is a

- a) Xerophyte
- b) Hydrophyte
- c) Mesophyte
- d) Lithophyte.

14. Rubiaceae is placed under the series

- a) Inferae
- b) Heteromerae
- c) Bicarpellate
- d) Unisexuales.

15. The fruit of the members of fabaceae is

- a) Berry
- b) Drupe
- c) Legume
- d) Caryopsis.

16. 'Foolish Seedling' disease of rice is caused by

- a) Auxin
- b) Gibberellin
- c) Cytokinin
- d) Abscisic acid.

17. Which one of the following terms was coined by T.D. Lysenko ?
- a) Vernalization
 - b) Photoperiodism
 - c) Phytochrome
 - d) Maryland Mammoth.
18. Which of the following is an aquatic fern ?
- a) Azolla
 - b) Nephrolepis
 - c) Anabaena
 - d) Acacia.
19. Which of the following alcohols is prepared by the fermentation of rice in Japan ?
- a) Ethyl alcohol
 - b) Sake
 - c) Methyl alcohol
 - d) Alcohol.
20. Which one of the following plants belongs to Poaceae ?
- a) Groundnut
 - b) Cotton
 - c) Teak
 - d) Rice.
21. Double Helix DNA model was proposed by
- a) Watson and Crick
 - b) Avery et al
 - c) Griffith
 - d) Stinberg.
22. Which one of the following processes is employed to introduce a foreign gene into a cell ?
- a) Electrolysis
 - b) Electroporation
 - c) Sterilization
 - d) Ligation.
23. is the name given to the chromosome that will serve to carry the gene of interest to its new host.
- a) Source DNA
 - b) Host DNA
 - c) Vector DNA
 - d) DNA ligase.

24. Somatic hybrids are produced through
- a) Asexual fusion
 - b) Protoplasmic fusion
 - c) Vegetative propagation
 - d) Grafting.
25. The lock and key theory of enzyme action was proposed by
- a) Buchner
 - b) Kuhne
 - c) Fischer
 - d) Koshland.
26. The binomial of garlic is
- a) *Allium cepa*
 - b) *Allium sativum*
 - c) *Aloe vera*
 - d) *Lilium candidum*.
27. *Adonidia merillia* is otherwise known as
- a) Palmyra Palm
 - b) Wine Palm
 - c) Royal Palm
 - d) Manila Palm.
28. The other name of pith is
- a) fibre cell
 - b) stone cell
 - c) supporting cell
 - d) medulla.
29. Polyarch condition is found in
- a) Monocot stem
 - b) Dicot stem
 - c) Monocot root
 - d) Dicot root.
30. In Dicot stem, hypodermis is made up of
- a) Collenchyma cells
 - b) Parenchyma cells
 - c) Sclerenchyma cells
 - d) Phloem.

SECTION - B

Note : i) Answer any *fifteen* questions.

ii) Each question carries *three* marks.

15 × 3 = 45

31. Define Herbarium.
32. Mention the binomial of any three medicinal plants of Malvaceae.
33. What is syngenesious stamen ? Give an example.
34. What is allicin ?
35. Define aerenchyma. Give an example.
36. What are B chromosomes ?
37. What are tightly linked genes ?
38. What are the loops found in the clover leaf structure of t-RNA ?
39. Write any three therapeutic drugs manufactured through recombinant DNA.
40. Why is SCP not popular for human consumption ?
41. What is enzyme-substrate complex ?
42. Why are chloroplasts in C₄ plants called dimorphic chloroplasts ?
43. Write three differences between photo-respiration and dark-respiration.
44. Define Anaerobic Respiration.
45. What are called phytohormones ? Give an example.
46. What is apical dominance ?
47. Define Vernalization.

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48. What is phytochrome ?
49. What is colchicine ? Mention its uses.
50. What are the two types of mycorrhiza ? Give examples.

SECTION - C

Note : i) Answer any seven questions.

ii) Answer to Question No. 54 is compulsory and this question should not be left as option.

iii) Each question carries five marks.

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

51. Give any five salient features of ICBN.
52. What are the differences between ray and disc florets ?
53. Explain the characteristics of meristematic cells.
54. Distinguish the anatomy of dicot roots from that of monocot roots.
55. Draw and label the parts of a T.S. of Dicot leaf.
56. Write the types of chromosomes based on shape and position of the centromere.
57. Draw the structure of Watson and Crick model of DNA and label the parts.
58. Write the most important events of recombinant DNA technology.
59. Write a short note on protoplasmic fusion.
60. What is fermentation ? Explain.
61. Explain the experiment to measure the actual longitudinal growth of plant by Lever auxanometer.
62. List out any five aims of plant breeding.

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SECTION - D

Note : i) Answer any *four* questions.

ii) Each question carries *ten* marks.

iii) Draw diagrams wherever necessary. $4 \times 10 = 40$

63. Write the outline of Bentham and Hooker's classification of plants and explain.
 64. Describe *Clitoria ternatea* in botanical terms.
 65. Tabulate the differences between dicot stem and monocot stem.
 66. Give an account of chromosomal aberration on the basis of its structure.
 67. Write an essay on plant tissue culture.
 68. Draw Krebs cycle without explanation.
 69. Give an account on the physiological effects of auxins and gibberellins.
 70. Write about the economic importance of Rice and Groundnut.
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