PART III

XII STANDARD– BOTANY

Time allowed : 3.00 Hrs   **Maximum Marks : 150**

Section A

30 x 1 = 30

Note : 1. Answer **all** the questions.
2. Choose and write the correct option.
3. Each question carries **one mark.**

1.   Bentham and Hooker's classification of plants is an example for
   a.   artificial system   b.   natural system
   c.   phylogenetic system   d.   sexual system

2.   'Origin of species' had given stimulus for the creation of classification of plants called
   a.   sexual system   b.   natural system
   c.   phylogenetic system   d.   artificial system

3.   Plants having flowers with petals fused with one another are placed under
   a.   polypetalae   b.   gamopetalae
   c.   apetalae   d.   calyciflorae

4.   Solanaceae is placed under
   a.   malvalaes   b.   rosales
   c.   polemoniales   d.   unisexuales

5.   Monothecous anthers are seen in the members of
   a.   Malvaceae   b.   Asteraceae
   c.   Fabaceae   d.   Liliaceae

6.   Vexillary aestivation is seen in the corolla of
   a.   Malavaceae   b.   Asteraceae
   c.   Solanaceae   d.   Fabaceae

7.   The type of aestivation seen in the perianth of female flowers of *Cocos nucifera* is
   a.   twisted   b.   descendingly imbricate
   c.   valvate   d.   ascendingly imbricate

8.   Lacunate collenchyma is seen in
   a.   *Ipomea*   b.   *Helianthus*
   c.   *Datura*   d.   *Nicotiana*

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9. Root hair develops from
   a. trichoblast
   b. trichome
   c. subsidiary cell
   d. rhizodermis

10. Hypodermis of maize stem is made up of
   a. parenchyma
   b. collenchyma
   c. sclerenchyma
   d. chlorenchyma

11. The vascular bundles are collateral, open and endarch in
   a. monocot stem
   b. monocot root
   c. dicot root
   d. dicot stem

12. Bundle sheath in dicot leaf is made up of
   a. chlorenchyma
   b. parenchyma
   c. sclerenchyma
   d. collenchyma

13. One of the stop codons is
   a. UAA
   b. AAA
   c. CCC
   d. CCA

14. The unit of genetic map is
   a. codon
   b. lux
   c. micrometre
   d. Morgan

15. The 17th human chromosome is
   a. metacentric
   b. submetacentric
   c. telocentric
   d. acrocentric

16. Trisomy is represented by
   a. 2n - 1
   b. 2n - 2
   c. 2n + 2
   d. 2n + 1

17. Unorganized mass of undifferentiated tissue is called
   a. explant
   b. callus
   c. somatic embryo
   d. inoculum

18. The enzyme which cleaves DNA at very specific places is called
   a. ligase
   b. polymerase
   c. primase
   d. restriction enzyme

19. The fusogenic agent used in protoplasmic fusion is
   a. manitol
   b. sorbitol
   c. polyethylene glycol
   d. hypochlorite acid

20. The name enzyme was coined by
    a. Buchner
    b. Pasteur
    c. Fischer
    d. Kuhne

21. Protein component of an enzyme is called
    a. co-factor
    b. holoenzyme
    c. apoenzyme
    d. prosthetic group

22. Which one of the following is essential for the formation of chlorophyll?
    a. Manganese
    b. Magnesium
    c. Iron
    d. Copper

23. Which one of the following is a 4 carbon compound?
    a. Glucose
    b. DHAP
    c. Xylulose
    d. Erythrose

24. Hatch-Slack pathway is also known as
    a. glycolysis
    b. C_2 Pathway
    c. C_3 Pathway
    d. C_4 Pathway

25. An example for insectivorous plant is
    a. *Viscum*
    b. *Cuscuta*
    c. *Monotropa*
    d. *Drosera*

26. Glycolysis takes place in
    a. mitochondrion
    b. cytoplasm
    c. ribosome
    d. peroxisome

27. The rate of growth in length can be measured by
    a. Lever auxanometer
    b. test tube and funnel experiment
    c. Kuhne's experiment
    c. Ganong's experiment

28. Which of the following is widely employed as a successful biofertilizer in Indian rice field?
    a. *Sesbania rostrata*
    b. *Acacia nilotica*
    c. *Indigofera linifolia*
    d. *Azolla pinnata*

29. Tikka disease of groundnut is caused by
    a. *Pyricularia oryzae*
    b. *Cercospora personata*
    c. *Xanthomonas citrii*
    d. *Tungro virus*

30. The plant product used to treat heart diseases is
    a. morphine
    b. quinine
    c. digoxin
    d. ephedrine

Section B

Note : 1. Answer any **15** questions.

      2. Each question carries **3 marks.**

31. What is type specimen?

32. Write the botanical names of any two medicinal plants of Asteraceae and state their uses.

33. Write a note on androecium of *Schizanthus pinnatus.*

34. Draw the floral diagram of disc floret of *Tridax* and write its floral formula.

35. Write any three anatomical differences between gymnosperm and angiosperm.

36. What is genome?

37. Write any three significance of crossing over.

38. Write three sentences about genetic code.

39. Define recombinant DNA.

40. How is cell wall removed from intact cells by enzymes?

41. Define energy of activation.

42. Differentiate PS I from PS II.

43. What is photolysis of water?

44. Under what conditions does cyclic electron transport take place?

45. Write the overall reaction of glycolysis.

46. What is electron transport chain with reference to respiration? State its significance.

47. Define respiratory quotient. What is the respiratory quotient value of glucose?

48. What is bolting?

49. Explain genetically modified organisms in biological warfare.

50. Write any three economic importance of groundnut.

$7 \times 5 = 35$

Note : 1. Answer any **7** questions.

2. Answer to **55ᵗʰ question is compulsory** and this question should not be left as option.

3. Draw diagrams wherever necessary.

4. Each question carries **5 marks.**

51. Bring out any five salient features of ICBN.

52. Write the economic importance of the family Rubiaceae.

53. Describe xylem tissue.

54. Draw the internal structure of monocot leaf and label the parts.

55. Describe the vascular tissue system.

56. Draw the structure of Watson and Crick model of DNA and label the parts.

57. Write any five significance of ploidy.

58. State the applications of tissue culture.

59. Write the most important events of recombinant DNA technology.

60. Explain sigmoid growth curve.

61. Explain Fischer's Lock and Key theory of enzyme action.

62. Discuss the benefits of biofertilizers.

SECTION - D

Note : 1. Answer any **4** questions.

2. Draw diagrams wherever necessary

3. Each question carries **10 marks.**

63. Describe *Cocos nucifera* in botanical terms.

64. a. Write a note on economic importance of Fabaceae.   (5 Marks)

    b. Differentiate the androecium and gynoecium of Malvaceae to that of Rubiaceae.

                                                                           (5 Marks)

65. Describe the anatomy of monocotyledonous stem.

66. Explain the central dogma of molecular biology.

67. Describe the various steps involved in protoplasmic fusion.

68. Explain various steps involved in Calvin cycle.

69. a. Describe the experiment to demonstrate the liberation of carbon dioxide during respiration.   (5 Marks)

    b. Write the significance of pentose phosphate pathway.   (5 Marks)

70. What is sustainable agriculture? Describe its role in modern agricultural practices.

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