GENERAL INSTRUCTIONS:
1. The paper is divided into four Sections A, B, C and D.
2. Questions of Section A consist of one mark each, Section B of two marks each, Section C of 3 marks each and Section D of four marks each. There are a total of 30 questions.
3. All questions are compulsory.

SECTION-A

1. What is the reason for cellulose being termed a homopolymer?
2. What enables halophiles to survive in extremely salty areas?
3. Name the genus and family to which mango belongs.
4. Identify the organism and its place in the plant kingdom.

5. Identify the type of placentation and give an example.

6. Write the floral formula for the floral diagram given below.

P.T.O.
7. What is the function of the mesophyll tissue in a dorsiventral leaf?
8. Which stage of meiosis does the following represent? Give the reason.

9. What is the difference between:
   (a) Conjoint open and conjoint closed vascular bundle.
   (b) Exarch and Endarch Primary Xylem.

10. Draw the diagram of a hypogynous flower.

11. Name each of the following:
    (a) A sporozoan protist that causes malaria.
    (b) A eubacteria that contains heterocysts.
    (c) The parasitic fungi on mustard
    (d) A dinoflagellate that causes red tides.

12.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Class</th>
<th>Major pigments</th>
<th>Stored food</th>
<th>Cell Wall</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chlorophyceae</td>
<td>Chlorophyll a, b</td>
<td>A</td>
<td>Cellulose</td>
</tr>
<tr>
<td>2</td>
<td>b</td>
<td>Chlorophyll a, c</td>
<td>Mannitol,</td>
<td>c</td>
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<tr>
<td></td>
<td></td>
<td>and fucoxanthin</td>
<td>laminarin</td>
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</tr>
<tr>
<td>3</td>
<td>Rhodophyceae</td>
<td>D</td>
<td>Floridean starch</td>
<td>Cellulose</td>
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13. Name the liverwort shown above. Is it a male or female thallus? Label A and B in the diagram.

14. Define the following terms:
    (a) Conjunctive tissue
    (b) Bulliform cells
(c) Stomatal apparatus  
(d) Sclereids  

15. Draw and label the haplionic life-cycle pattern.

16. Give the functions of the following:  
   (a) Lysosomes  
   (b) The centrosome  
   (c) RER  
   (d) Amyloplasts  

17. Write the significance of meiosis.

18. What is meant by phyllotaxy? What phyllotaxy is seen in sunflower and guava plants?

SECTION-C

19. What is the technical term for imperfect fungi? Why are they so called? What modes of nutrition are seen in them?

20. You are given slides of T.S. of monocot and dicot roots. What are the characters which help you to identify them?

21. Name the stage of cell cycle at which the following events occur:  
   (i) DNA replication.  
   (ii) Splitting of centromere and separation of chromatids.  
   (iii) Formation of tetrads.  
   (iv) Crossing over between homologous chromosomes.  
   (v) Dissolution of the synaptonemal complex.  
   (vi) Terminalization of chiasmata.

22. (a) Explain double fertilization in angiosperms.  
   (b) What is the fate of the antipodals, synergids, ovaries and ovules after fertilization?

23. Draw and label the life-cycle of a pteridophyte.

24. (a) Give two reasons to justify that turmeric is a modified stem and not a root.  
   (b) Which part of the plant is modified to form:  
      (i) Pneumatophores in Rhizophora (ii) Tendrils in Pea  
      (iii) Thorn in Bougainvillea (iv) Spines in Cactus

25. Give reasons for the following:  
   (a) Coconut oil solidifies in winters.  
   (b) The two strands of DNA are said to be antiparallel.  
   (c) Some amino acids are termed essential amino acids.
26. Bacterial cells have a complex cell envelope. Explain the composition and the function of the same.

27. What do you mean by co-factors of an enzyme?
   Mention the difference between:
   Prosthetic group and Co-enzyme.

SECTION-D

28. (a) As the dicot stem continues to increase in girth due to the activity of vascular cambium, the cortical and epidermis layers get broken and need to be replaced to provide new protective layers. How is this done?
   (b) Distinguish between heartwood and sapwood.

29. What is cytokinesis? How is it achieved in plant and animal cells? What happens when karyokinesis is not followed by cytokinesis? Give an example of this. When does the nucleo-cytoplasmic ratio in cells get disturbed and how is it restored?

30. (a) What are mycorrhiza?
   (b) What are viroids and how are they different from viruses? Who discovered them?
   (c) What are lichens?