

Section-A

1) Answer the following questions. (Each carries 1 mark) [24]

- i. Can you identify the correct sequence of taxonomical categories?
a) Species → Order → Phylum → Kingdom
b) Genus → Species → Order → Kingdom
c) Species → Genus → Order → Phylum
- ii. State one economically important uses of archaebacteria.
- iii. Match the following (column I with column II)
- | Column I | Column II |
|------------------|-------------------|
| a) Chlamydomonas | (i) Moss |
| b) Cycus | (ii) Pteridophyte |
| c) Selaginella | (iii) Algae |
| d) Sphagnum | (iv) Gymnosperm |
- iv. Water vascular system is the characteristic of which group of the following:
(a) Porifera (b) Ctenophora (c) Echinodermata (d) Chordata
- v. Define : Aestivation
- vi. How many types of nephridia are found in earthworm based on their location?
- vii. What is a mesosome in a prokaryotic cell?
- viii. Draw structure of Glycine.
- ix. The backbone in a nucleotide chain is formed by _____
- x. What is G₀ (quiescent phase) of cell cycle?
- xi. Can there be mitosis without DNA replication in 'S' Phase?
- xii. Complete the following chemical reaction for splitting of water during Photosynthesis.
$$2\text{H}_2\text{O} \text{ -----} > \underline{\hspace{2cm}}$$
- xiii. Define RQ. What is its value for fats?
- xiv. What are respiratory substrates? Name the most common respiratory substrate.
- xv. Which one of the plant growth regulators would you use if you are asked to:
Induce growth in axillary buds
- xvi. State the value of air remaining in the lungs after a normal breathing.
- xvii. Explain the term: Systole and Diastole.
- xviii. Why do we call our heart myogenic?
- xix. Fill in the gaps:
(i) Dialysis fluid contain all the constituents as in plasma except _____

- xx. Write true or false. If false change the statement so that it is true.
(i) Sternum is present on the ventral side of the body.
- xxi. Name the type of joint between the following:
(i) Between pubic bones in the pelvic girdle.
(ii) Femur / acetabulum
- xxii. Differentiate between: cerebrum and cerebellum.
- xxiii. Fill in the blanks:
- | Hormones | Target gland |
|-----------------------------|--------------|
| a) Gonadotrophins (LH, FSH) | _____ |
| b) Melanotrophin (MSH) | _____ |
- xxiv. Which hormonal deficiency is responsible for the following?
(a) Goitre (b) Cretinism

Section – B

❖ **Answer any 11 questions from the following: (Each carries 2 marks). [22]**

2. How are viroids different from viruses?
3. Differentiate between the following: red algae & brown algae.
4. "All vertebrates are chordates but all chordates are not vertebrates." Justify the statement.
5. Describe briefly: Racemose & Cymose inflorescence.
6. What are the following and where do you find them in normal body.
(a) Axons (b) Ciliated epithelium
7. What are the nuclear pores? State their function.
8. Describe the important properties of enzymes.
9. How does cytokinesis in plant cells differ from that in animal cells?
10. Give comparison between the following:
Anatomy of leaf in C3 and C4 plants.
11. Give the schematic representation of an overall view of Krebs cycle.
12. Define oxygen dissociation curve. Can you suggest any reason for its sigmoidal Pattern?
13. Name of the components of the formed elements in the blood and mention one major function of each of them.
14. What is the significance of juxta glomerular apparatus (JGA) in kidney function?
15. Write the difference between: pectoral and pelvic girdle.
16. Answer the following:
(i) Which part of the human brain is the most developed?
(ii) Which part of our central nervous system act as a master clock?
17. Write short note on the functions of Androgens.

Section- C

❖ **Answer any 8 questions from the following. (Each carries 3 marks) [24]**

18. Define and understand the following terms:
(i) Phylum (ii) Family (iii) Genus
19. What is heterospory? Briefly comment on its significance. Give two examples.
20. Give comparison of chordates & Non-chordates.
21. Draw a neat diagram of digestive system of frog.
22. What is a centromere? How does the position of centromere form the basis of classification of chromosomes. Support your answer with a diagram showing the position of centromere on different types of chromosomes.
23. Explain the following bond linking of monomers in a polymer. (i) Peptide polymer (ii) Glycosidic bond (iii) Phosphodiester bond.
24. List the main differences between mitosis and meiosis.
25. Describe the stages of Calvin cycle. (Diagram is not necessary).
26. What would be expected to happen if:
(i) GA₃ is applied to rice seedlings.
(ii) a rotten fruit gets mixed with unripe fruits.
(iii) you forget to add cytokinin to the culture medium.
27. What is the significance of atrio-ventricular node and atrio-ventricular bundle in the functioning of heart?
28. Describe the role of liver, lungs and skin in excretion.
29. Explain briefly ovarian hormones.

Section – D

❖ **Answer any 2 questions from the following: (Each carries 5 marks) [10]**

30. Explain: Transmission of a nerve impulse across a chemical synapse with diagram.
31. Explain the steps involve in respiration process in human being.
32. Explain the structure of protein.