

SECTION – I**2. Write short answers to any EIGHT (8) questions :****16**

- (i) What do hypotonic and hypertonic environment mean for a cell?
- (ii) How cartilaginous fishes show osmoregulatory activity to maintain internal osmotic state with two ways?
- (iii) What are xerophytes, write its one adaptation and one example.
- (iv) Distinguish between the origin and insertion of muscle.
- (v) List the main parts of axial skeleton.
- (vi) Why ecdysis is necessary in arthropods? Justify.
- (vii) Name the causative agent of gonorrhea, also write its two symptoms.
- (viii) Write the role of oxytocin during birth process.
- (ix) Define desertification, give its one reason and one effect.
- (x) Give location and rain fall of temperate deciduous forest in Pakistan.
- (xi) Name one pathogenic and one nutritional deficiency disease.
- (xii) Write the source and harmful effects of chlorofluorocarbon.

3. Write short answers to any EIGHT (8) questions :**16**

- (i) Justify, calcitonin is antagonistic to parathormone.
- (ii) Why nitrogen and magnesium deficiency leads to chlorosis?
- (iii) Describe two main functions of spinal cord.
- (iv) What are true breeding traits?
- (v) Is SRY gene important in females?
- (vi) How epistasis is different from dominance?
- (vii) Define anther culture. Write down its one significance.
- (viii) How plants are made salt tolerant?
- (ix) Enlist some possible ways to get a gene.
- (x) Give name of phases of primary succession.
- (xi) Why over grazing is harmful for a grassland?
- (xii) Define ecological niche, who proposed this term?

4. Write short answers to any SIX (6) questions :**12**

- (i) How can aging be slowed down?
- (ii) How does temperature affect plant growth?
- (iii) What is the reason behind the development of sickle cell anemia?
- (iv) Define point mutation. Give an example.
- (v) Briefly describe the semi-conservative hypothesis of DNA replication.
- (vi) What is metastasis?
- (vii) How does cytokinesis occur in plant cell?
- (viii) How are evolutionary relationships among species reflected regarding DNA and proteins?
- (ix) What is endosymbiont hypothesis? Give an example.

SECTION – II**Note : Attempt any THREE questions.**

5. (a) Explain the excretory products of different animals. 4
- (b) What are meiotic errors? Explain Mongolism and Klinefelter's Syndrome. 4
6. (a) Define joints. How are they classified? Explain different types of joints. 4
- (b) Describe predation and parasitism and their significance. 4
7. (a) Briefly explain synapse. 4
- (b) Discuss endangered species in detail. 4
8. (a) Define photoperiodism. Explain types of plants on its bases. 4
- (b) Briefly explain the problem erythroblastosis foetalis faced by certain parents. 4
9. (a) What are meristems? Explain their types highlighting their location in plant body and their roles. 4
- (b) Write down the steps of DNA finger printing. (Analyzing DNA) 4