

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

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- (i) What components of internal environment are affected by external fluctuations? How are these corrected?
- (ii) What may happen to a cell when placed in a hypotonic environment and then in a hypertonic environment?
- (iii) Justify the statement, “ Excretion of uric acid in some terrestrial animals is an adaptation to conserve water”.
- (iv) Compare sapwood and heartwood.
- (v) Write the name of unpaired bones of human cranium and face.
- (vi) What is osteoporosis? How is it treated?
- (vii) How do plants detect light or dark period?
- (viii) What is vernalin? How is it produced in plants?
- (ix) What do you mean by the productivity of an ecosystem? How is it determined?
- (x) What kind of soil conditions are found in grassland ecosystem?
- (xi) What is nutrient cycle? How is this cycle disturbed?
- (xii) Write the sources and harmful effects of CFCs and SO₂.

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

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- (i) How plants respond to stimuli?
- (ii) In what way nerve impulse triggers the action potential?
- (iii) How different modalities of sensation work?
- (iv) What are multiple alleles? Mention their presence in diploid and haploid organisms.
- (v) What is test cross? Write down its uses.
- (vi) Differentiate between gene linkage and linkage group.
- (vii) Write two possible ways to get genes.
- (viii) What are plasmids? Give their two examples.
- (ix) Write down the two uses of PCR amplification.
- (x) Differentiate between autecology and synecology.
- (xi) How the trophic levels are involved in the flow of energy?
- (xii) What is prey and predator interaction? Write its significance.

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

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- (i) How are area pellucida and area opaca developed?
- (ii) The number of older individuals are expected to rise in humans, discuss.
- (iii) Why does every genetic code consists of three nucleotides?
- (iv) What do you know about the minimal medium used by Beadle and Tatum?
- (v) Describe promoter area in transcription.
- (vi) Describe mitotic apparatus.
- (vii) Describe Turner's syndrome.
- (viii) Differentiate between homologous and analogous structures.
- (ix) Define Hardy Weinberg Theorem.

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

5. (a) Explain in detail the adaptations in plants to high and low temperature. 4
- (b) What is food web? Give its significance. Draw a food web. 4
6. (a) Explain some major functions of skeletal system in maintenance of human life. 4
- (b) Discuss chemical nature of DNA with reference to nucleoside and nucleotide composition. 4
7. (a) Describe major factors which restore resting membrane potential in a neuron after passage of a nerve impulse. 4
- (b) Discuss the importance of forests for human. 4
8. (a) Discuss sexually transmitted diseases. How can these be controlled? 4
- (b) Write an essay on crossing over. 4
9. (a) Discuss abnormal development due to environmental factors and metabolic defects. 4
- (b) Explain natural selection and artificial selection as evidence of evolution. 4