

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

16

- (i) Differentiate between osmoconformers and osmoregulators.
- (ii) Define counter current multiplier.
- (iii) Skin does not come within the definition of excretory organ. Comments.
- (iv) What is jet propulsion? Explain with an example.
- (v) Differentiate between effective stroke and recovery stroke.
- (vi) What is sleep movement? Also write an example.
- (vii) Give any two requirements to produce recombinant DNA.
- (viii) Give the role of restriction endonucleases.
- (ix) List the name of eight cities of Pakistan where desert ecosystem occurs.
- (x) Differentiate between alpine and boreal coniferous forests.
- (xi) How man is responsible to increase the number of endangered species?
- (xii) Differentiate between deforestation and afforestation.

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

16

- (i) How do plants respond to environmental stresses?
- (ii) List the four types of hormones with examples.
- (iii) Differentiate between CNS and PNS.
- (iv) Define vernalisation. Which parts of plants received its effects?
- (v) Differentiate between oviparous and viviparous.
- (vi) Explain the role of gonadotropins in human female.
- (vii) Write formula to calculate recombination frequency.
- (viii) Define codominance with an example.
- (ix) In grasshoppers male has 23 chromosomes, while female has 24 chromosomes. Work out.
- (x) Differentiate between food chain and food web.
- (xi) Differentiate between autecology and synecology.
- (xii) What roles are played by links of food chain.

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

12

- (i) Write any four causes of aging.
- (ii) What are neoblasts and what is their role in development?
- (iii) Write any two differences between normal cells and cancer cells.
- (iv) How meiosis plays its role in producing genetic variations?
- (v) Why cap and tail is added to eukaryotic RNA, when it leaves from nucleus to cytoplasm?
- (vi) Write two characteristics of DNA polymerase III.
- (vii) Define promoter and what is its role?
- (viii) What is membrane invagination hypothesis?
- (ix) Describe briefly, how molecular biology supports evolution.

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

5. (a) Describe the excretion in cockroach. Also draw labelled diagram. 3,1
- (b) How the flow of energy in food chain of an ecosystem takes place? 4
6. (a) Explain sliding filament model. How the bridges are controlled? 2,2
- (b) Explain work of Beadle and Tatum on Neurospora with help of a figure. 2,2
7. (a) Explain the role of hormones produced by posterior lobe of pituitary gland. 4
- (b) Describe importance of forests. 4
8. (a) Describe male reproductive system in man. 4
- (b) Explain the phenomenon of sex determination in humans. 4
9. (a) Explain Darwin theory of natural selection. 4
- (b) Write a note on regeneration. 4