

AU--309

M.Sc. (Part-I) Semester-II (CBCS Scheme) Examination

ZOOLOGY

Paper-V

(Molecular Cell Biology)

Time : Three Hours]

[Maximum Marks : 80

Note :— (1) All questions are compulsory.

(2) All questions carry equal marks.

(3) Illustrate your answers with suitable diagrams wherever necessary.

1. Describe biochemical composition of biomembranes.

OR

Describe cell-cell adhesion molecules.

16

2. Give an account of the following :

(a) Signaling molecules

(b) Cytokine receptors

(c) G-protein-coupled receptors that activate phospholipase-C

(d) Autocrine and juxtacrine modes of cell signaling.

OR

(e) Receptor protein-guanylyl cyclases

(f) Properties of cell surface receptors

(g) Receptor protein-tyrosine kinases

(h) G-protein-coupled receptors that activate or inhibit adenylyl cyclases.

16

3. Give an account of the following :

(i) Ion channels and electrical signaling

(j) Second messengers

(k) Signal transduction in olfaction

(l) Signal transduction by receptor enzymes.

OR

- (m) Smad pathway
 - (n) Features of signal transducing systems
 - (o) JAK-STAT pathway
 - (p) Signal transduction by G-protein coupled receptors. 16
4. Describe the cell cycle checkpoints.

OR

- Describe the structure and dynamics of microtubules and microfilaments. 16
5. Give an account of the following :
- (q) Initiation of protein synthesis in eukaryotes
 - (r) Lysosomal assembly and functions
 - (s) Uptake of protein into ER
 - (t) Elongation phase of protein synthesis in eukaryotes.

OR

- (u) Activation of amino acids for protein synthesis in eukaryotes
- (v) Protein sorting in Golgi apparatus
- (w) Import of proteins across nuclear membrane
- (x) Termination of protein synthesis in eukaryotes. 16