

M.Sc. Examination, 2016

Semester-I

Biotechnology

Paper – I

(Cell Biology)

Time: 3 Hours

Full Marks: 40

Questions are of value as indicated in the margin.

Answer ***any four*** questions.

1. Compare and contrast G-protein coupled receptors and tyrosine-kinase receptors. Distinguish between protein kinases and phosphatases. Define a second messenger. 6+3+1=10
 2. Describe the structure of nuclear pore complex with schematic illustration. Explain with an experimental evidence that the outer and inner mitochondrial membranes get attached during the translocation of proteins into mitochondrial matrix. 6+4=10
 3. Justify : (***any two***): 5×2=10
 - (a) Myc is a proto-oncogene
 - (b) Rb is a tumour suppressor gene
 - (c) p53 is a double edged sword.
 4. Define and classify caspases. Describe with example the caspase dependent extrinsic pathway of apoptosis in mammalian cells. 4+6=10
 5. Briefly comment on the lipid composition of cellular membranes. How are these components distributed in the plasma membrane? Briefly describe the organization of intermediate filaments. 3+4+3=10
 6. Write short notes on ***any four*** : 2.5×4=10
 - (a) MTOC
 - (b) RAN-GTP
 - (c) Desmosomes and Hemidesmosomes
 - (d) Cadherins
 - (e) Anterograde and retrograde vesicles
 - (f) SNARE proteins
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