This question paper contains 4+1 printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : 6644

Unique Paper Code : 32531326 HC

Name of the Paper : Cell Biology

Name of the Course : B.Sc. (Hon.) Microbiology

Semester : III

Duration : 3 Hours Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *five* questions in *all*,

All questions carry equal marks.

1. (*a*) Define the following (any *six*) : 2×6=12

(*i*) Oncogene

(*ii*) Antiport

(*iii*) Endocrine signaling

(*iv*) Sarcoma

(*v*) Nucleosome

(*vi*) Phagocytosis

(*vii*) Signal transduction

P.T.O.

(*b*) Expand the following abbreviations (any *six*) : 0.5×6=3

(*i*) NLS

(*ii*) MPF

(*iii*) LDL

(*iv*) CFTR

(*v*) PDGF

(*vi*) VEGF

(*vii*) GPCR.

2. Write short notes on any *three* of the following : 3×5=15

(*a*) Mitochondria

(*b*) Nuclear Pore Complex

(*c*) Collagen

(*d*) Desmosomes.

3. (*a*) Differentiate the following (any *three*) : 3×4=12

(*i*) Tight and Gap junctions

(*ii*) Heterochromatin and Euchromatin

(*iii*) Apoptosis and Necrosis

(*iv*) Ion channel and ABC transporter.

(*b*) Justify the statement "If a cell is in G2 then it has twice the amount of DNA present in a telophase nucleus". 3

4. (*a*) Where are the following enzymes (any *five*) located in the cell. : 5×1=5

(*i*) Cellulose synthase

(*ii*) ATP synthase

(*iii*) Rubisco

(*iv*) Glycosyl transferase

(*v*) Protein disulfide isomerase

(*vi*) Catalase.

(*b*) Write the contributions of the following scientists (any *five*) : 2×5=10

(*i*) George Palade

(*ii*) Shinya Yamanaka

(*iii*) Sir Paul Nurse

(*iv*) Robert Horvitz

(*v*) Ian Wilmut

(*vi*) Alfred Knudson.

5. (*a*) Give *one* example of each of the following types of signaling molecules (any *five*) : 5×1=5

(*i*) Steroid hormone

(*ii*) Neurotransmitter

(*iii*) Peptide hormone/Growth factor

(*iv*) Eicosanoids

(*v*) Plant hormone

(*vi*) Gas.

(*b*) Comment on the role of angiogenesis inhibitors as anticancer agents. 3

(*c*) Discuss the mechanism of protein folding and processing in endoplasmic reticulum. 7

Or

Enumerate the steps involved in the production of induced pluripotent stem cells. Discuss their applications.

6. (*a*) Describe the events in a cell undergoing apoptosis with the help of suitable diagrams 5

(*b*) Discuss the properties of cancer cells. 6

(*c*) Discuss briefly the features of Receptor protein tyrosine kinases. 4

Or

Discuss briefly the signaling mechanism of G-protein coupled receptors.