G-1/147/22

Roll No. .....

I Semester Examination, January 2022

M.Sc.

BIOCHEMISTRY

Paper I

(Cell Biology)

Time : 3 Hours] [Max. Marks : 80

Note : *All questions are compulsory. Question Paper comprises of 3 Sections. Section A is objective type/multiple choice questions with no internal choice. Section B is short answer type with internal choice. Section C is long answer type with internal choice.*

SECTION A **1×8=8**

(Objective Type/Multiple Choice Questions)

Choose the correct answer :

1. Erythrocyte glucose transporter is an example of :

   (a) Ion driven active transport

   (b) Facilitated diffusion

   (c) Active transport

   (d) Simple diffusion.

P.T.O.

2. Which of the following statements is false about ligand-gated ion channel receptor ?
   (a) They are present in the cell membrane
   (b) They consist of five glycoproteins
   (c) Differences in membrane potential affect whether the channel receptors are open or close
   (d) Neurotransmitters can act as the chemical messengers for these channels.
3. Posttranslational modification of many eukaryotic proteins begins in the :
   (a) Endoplasmic reticulum
   (b) Mitochondria
   (c) Chloroplasts
   (d) Nucleus
4. Name the family of monomeric G-protein which regulates the growth of the cell ?
   (a) Ras (b) Rab
   (c) Ran (d) Rho
5. Oncogenes do not encode for :
   (a) Trans-membrane protein receptors
   (b) Growth factors
   (c) DNA-dependent RNA polymerase
   (d) Cytoplasmic G-proteins and protein kinases

6. Which of the following is not a major class of chromatin proteins ?
   (a) Histones (b) Topoisomerases
   (c) SMC proteins (d) Cohesins
7. What is Ubiquitin ?
   (a) Protein kinase
   (b) Protease
   (c) Component of the electron transport system
   (d) Protein that tags another protein for proteolysis
8. Which of the following vesicle transport cargo proteins from rough RE to Golgi complex ?
   (a) COP-I Coated (b) COP-II Coated
   (c) COP-III Coated (d) COP-IV Coated

SECTION B **6×4=24**

(Short Answer Type Questions)

Note : *Answer the following questions in* **250** *words.*

Unit-I

1. Asymmetrical Organization of lipid in the membrane.

Or

Describe Lipid rafts.

Unit-II

2. COP-I and COP-II mediated transport.

Or

Describe transport of protein transport into mitochondria.

Unit-III

3. Write short note on Retinoblastoma.

Or

Write short note on viral and cellular oncogenes.

Unit-IV

4. Differentiate Euchromatin and Hetrochromatin.

Or

Differentiate Lampbrush and Polytene chromosomes.

SECTION C **12×4=48**

(Long Answer Type Questions)

Note : *Answer the following questions in* 500 *words.*

Unit-I

1. Explain mechanism of gated ion channels in the membrane.

Or

Describe mechanism of Na^+/K^+ pump.

Unit-II

2. Explain process of transport of soluble and integrated protein from ER to the different part of the cell.

Or

Describe formation and mechanism of COP-II coated vesicle.

Unit-III

3. Explain division and control of cell cycle in Eukaryotic cell.

Or

Explain MAP kinase pathways.

Unit-IV

4. Explain Nucleosome Model of DNA Packaging.

Or

Explain states of chromosomes during cell cycle.

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