

2019

MSc

4th Semester Examination

HUMAN PHYSIOLOGY

PAPER – PHY - 402

Full Marks: 40

Time: 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their
Own words as far as practicable.

Illustrate the answers wherever necessary.

(Answer all the questions)

1.

- a) Write down the organization of lipid bilayer present in plasma membrane along with its significance.
- b) Differentiate phosphoglycerides and sphingolipids.
- c) What is cardiolipin? (2+1)+1+1

Or

- a) Write down one experiment in support of lateral diffusion of proteins in plasma membrane.
- b) What is the preferred secondary structure of membrane spanning region of a single – pass transmembrane protein? Why?
- c) Differentiate GPI and myristyl anchors of proteins in plasma membrane.
- d) Write down the significance of presence of cholesterol in plasma membrane. (1½+(½+1)+1+1)

2.

- a) Define microfilaments.
- b) Give a brief description of different action binding proteins and their mode of action in cell.
- c) What are vimentinlike proteins? 1+(2+1)+1

Or

- a) Write down two importance of cytoskeleton.
- b) What are cellular motor proteins? Describe their functions with reference to kinesin. (1+1+2+1)
- c) What is MTOC?

3.

- a) Name the different types of cell signaling mechanisms found in human.
- b) How does a single signaling molecule evoke differential responses in different tissues? Give example.
- c) Write down the signaling action of Adrenaline for breakdown of glycogen in a target cell. (1+(1+1)+2)

Or

- a) Give a brief description of mechanism of action of receptor – tyrosine kinase action in cell signaling.
- b) Mention one cell signaling pathway where protein kinase C is activated. Give example in terms of one physiological response in human. 3+(1+1)

4.

- a) Define cell cycle in eukaryotes. Write down its different phases including specific functions.
- b) What are cell cycle checkpoints? Name the different checkpoints along with their actions. (1+1)+(1+2)

Or

- a) What is meant by pluri potency in stem cells? Give example of a pluri potent stem cell.
- b) Give a brief description of hematopoietic stem cells and their lineages. (1+1)+2+1
- c) What is epigenetic control ?

UNIT -36

1. Define vector. Describe the structure and importance of plasmid vector. 1+4

Or

Write the bacteriophage vectors with suitable diagram mentioning advantages and disadvantages. 5

2. What is vDNA? Discuss in brief the different applications of vDNA. 1+4

Or

Write Short notes on –

- a) c DNA library.
- b) Insertional inactivation. 4+1

- 3.
- a) What is stem cell?
 - b) Describe how SCNT technique used in stem cell preparation and write its applications. 1+(3+1)

Or

Discuss how Prof. Ian Wilmut created first cloned animal "DOLLY". 5

4. Describe the procedure and applications of southern blotting technique with suitable diagram. 3+1+1

Or

Discuss how criminal's DNA is detected by DNA finger printing technique? 5