

**2016**

**M.Sc.**

**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.*

**( Unit—39 )**

Answer all questions from the following :

1. (a) Mention the structural basis of lipid bilayer in the eukaryotic cell membrane.
- (b) Mention the role of cholesterol in maintaining fluidity of the membrane. 4+1

*Or*

- (a) Give a brief account of organization of proteins in cell membrane.

*(Turn Over)*

- (b) What is GPI anchor ?
- (c) State an experiment to establish lateral diffusion of proteins in Cell membrane. 2+1+2
2. (a) Give a brief account of the basic structure and functions of microtubules in cells.
- (b) What is Kinesin ? (2+2)+1

Or

- (a) What are intermediate filaments? Mention their types.
- (b) Differentiate Myosin I and Myosin II.
- (c) Name the actin binding protein that crosslinks actin filaments. (1+2)+1+1
3. (a) Why CAMP is considered as second messenger ?
- (b) Explain with specific examples G-Protein linked signal transduction pathway where CAMP is second messenger. 1+4

Or

Write notes on:  $2\frac{1}{2}+2\frac{1}{2}$

- (a) Receptor Tyrosine Kinase.
- (b) Ion-channel linked receptor.
4. (a) Differentiate pluripotent stem cells and committed stem cells.

- (b) Mention the major properties of stem cells.
- (c) Give a brief account of hematopoietic stem cells and their lineages in physiological systems. 1+2+2

Or

- (a) What is meant by epigenetic control of differentiation?
- (b) Mention two methods which are considered as epigenetic control over differentiation. 2+3

**(Unit—40)**

Answer all questions from the following :

1. Discuss briefly the salient features of PBR322 with a suitable diagram. 5

Or

- (a) What is Phagemid? How Phagemid is used to generate both single and double stranded DNA?
- (b) What type of vectors are usually used for cloning larger DNA fragments? 1+3+1
2. Differentiate between cDNA and genomic DNA library. What are their advantages and disadvantages? 3+2

Or

Write short notes on —

$2\frac{1}{2}+2\frac{1}{2}$

- (a) Recombinant DNA Technology.

(b) Transformation and Transfection.

3. What is SCNT? How therapeutic cloning can be used in human disease treatment. 1+4

Or

(a) Write the importance or significance of animal tissue culture.

(b) Write a brief note on 'Human genome Project.' 2+3

4. Discuss the procedure and applications of Western blotting technique. 4+1

Or

Define gene chips. What is the role of proteomics in the prevention disease? Illustrate your answer with suitable examples. 1+4