

2015

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) Give an experimental evidence in support of - "plasma membrane contains lipid bilayer."
- (b) Name the factors those control membrane fluidity.

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

Or

- (a) Mention the names of major phospholipids found in mammalian plasma membrane.

(Turn Over)

(b) Discuss the functional relationship of asymmetric localization of phospholipids in two leaflets of lipid bilayer.

(c) What is FRAP? 1+2+2

2. (a) Define microfilaments.

(b) Give a brief account of different actin-binding proteins.

$1\frac{1}{2}+3\frac{1}{2}$

Or

(a) What are MAPs? Mention their functions.

(b) What do you understand by treadmilling in microtubule structure?

(c) What are motor proteins? (1+1)+2+1

3. (a) Name the different types of G-proteins involved in cell signaling.

(b) Discuss the mechanism of action of cell-signaling pathway mediated through Gq. Give an example.

1+(3+1)

Or

Write notes on:

2+3

(a) Difference between docking proteins and adapter proteins.

(b) Insulin mediated cell signaling for cellular glucose uptake.

4. (a) Give a brief description of embryonic stem cells.
 (b) What is clone? Mention the functions of satellite cells. 2+(1+2)

Or

- (a) What are G₁ cyclins? State their significance.
 (b) Mention the underlying reasons for the existence of G₁-S checkpoint in cell cycle. (2+1)+2

(Unit—40)

Answer all questions from the following :

1. Write brief notes on cosmid vectors and YAC Vectors.
 $2\frac{1}{2}+2\frac{1}{2}$

Or

Highlight the differences between cloning vector and expression vector. Name one insertion and one replacement lambda phage vector. Why M13 phage vector is used for DNA sequencing? 3+1+1

2. Describe about the various applications of recombinant DNA technology. 5

Or

Write short notes on — 1+1+1+2

- (a) Palindromic sequences.
 (b) Isoschizomers.

- (c) Phenotypic traits.
- (d) DNA finger printing.

3. How Prof. Ian Wilmut created first cloned animal "DOLLY" ? 5

Or

- (a) Define 'suspension culture' and 'continuous culture'.
- (b) Discuss the different natural and artificial media used in cell culture with examples. 2+3

4. Describe the procedure and importance of Southern Blotting. 5

Or

- (a) Define the terms 'genomics' and 'proteomics'.
- (b) How is genomics classified ? 2+3