PG/IVS/PHY - 402/14

M.A. 4th Semester Examination, 2014

HUMAN PHYSIOLOGY

PAPER– PHY - 402

Full Marks : 40

Time : 2 hours

The figures in the right-hand margin indicate marks

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

Illustrate the answers wherever necessary

UNIT – XXXIX

Answer any ***two*** questions

1. (*a*) Give a brief account of the localization of proteins in plasma membrane.

   (*b*) What is β-barrel ?

   (*c*) Give an experimental evidence in support of lateral diffusion of membrane proteins.

(*d*) Mention the underlying mechanisms for localization of membrane proteins in definite membrane domains. 4 + 1 + 3 + 2

2. (*a*) What are the differences between paracrine, synaptic and endocrine signaling ?

(*b*) Discuss in brief the mechanism of action of signaling pathway involving *G* protein and Adenylate cyclase.

(*c*) Describe the role of IP_3 in rising of intracelluar Ca^{2+} level. 3 + 4 + 3

3. (*a*) Define stem cells and mention their major properties.

(*b*) Name the primary layers of germ cells in mammals and mention in brief the pathway of their differentiation into adult tissues.

(*c*) What are haematopoietic stem cells ? Write down their importance. (1 + 2) + 4 + (1 + 2)

4. (*a*) What are the major roles played by cytoskeletal elements in cellular functions ?

(*b*) Name the microtubule based motor proteins and discuss their mode of actions.

(*c*) What are intermediate filaments ? 3 + 5 + 2

UNIT – XXXX

Answer any ***two*** questions from the following

1. (*a*) What is α-complementation ? Describe the importance of lac-z gene in PUC 19 plasmids.

(*b*) Write the procedure and application of western blotting technique. (1 + 4) + (4 + 1)

2. (*a*) What do you mean by cDNA library ?

(*b*) Define Ti plasmid. Write the different genes of Ti plasmid and mention their functional advantages. 3 + 2 + 5

3. (*a*) What is somatic cell nuclear transfer(SCNT) ?

(*b*) What is Therapeutic cloning ?

(*c*) Discuss briefly on therapeutic use of stem cells. 3 + 2 + 5

4. Write short notes on : 5×2

(*i*) Tissue culture

(*ii*) Restriction enzymes.
