# M.Sc. 4th Semester Examination, 2011

## HUMAN PHYSIOLOGY

PAPER—XX

*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*

**Write the answers to questions of each Unit in separate books**

UNIT—39

Answer any *two* questions

1. Describe the signal transduction mechanism mediated by receptor tyrosine kinases with a specific example. 10

2. (*a*) Establish with an experimental evidence that plasma membrane contains lipid bilayer.

   (*b*) Mention the different factors those control membrane fluidity.

   (*c*) What are the significance of multi-pass membrane proteins ? 5 + 3 + 2

3. Discuss the structural peculiarities of microtubules along with their functional significance. 5 + 5

4. (*a*) Discuss in brief how G2 to M phase transition in mammalian cells is controlled.

   (*b*) Write notes on :

   (*i*) Paracrine and autocrine cell signaling

   (*ii*) Difference of established cell lines from tumor cell lines. $5+\left(2\frac{1}{2}+2\frac{1}{2}\right)$

UNIT – 40

Answer any *two* questions

1. (*a*) Write the procedure and importance of Southern blotting technique.

(*b*) Describe the implications and the steps involved in reproducting cloning. 5 + 5

2. (*a*) What are essential and desirable characteristics of a cloning vector ?

(*b*) Classify different restriction enzymes with respect to their mode of actions.

(*c*) What are the major enzymes required in recombinant DNA technology ? 4 + 3 + 3

3. (*a*) State the importance of isoschizomers in methylation with examples.

(*b*) How can you clone cDNA molecule by using double linker molecule ? 3 + 7

4. Write short notes on the following : $2\frac{1}{2} \times 4$

(*i*) Plasmid

(*ii*) Transposons and retroposons

(*iii*) Mobile genetic element

(*iv*) Organ culture.

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