UG/I/BIOT/H/I/15

2015

BIOTECHNOLOGY

[Honours]

PAPER – I (New)

Full Marks : 90

Time : 4 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

[NEW SYLLABUS]

GROUP – A

Answer any **two** questions from the following : 15 × 2

1. (*a*) What is Zwitterion ? 2

(*b*) Describe the alpha helix and beta-pleated sheet structure of protein. 4 + 4

(*c*) What do you know about membrane proteins ? 5

2. (*a*) Classify enzymes with proper examples. 6

(*b*) What is Michaelis-Menten equation of enzyme kinetics ? Mention its limitation. 3 + 2

(*c*) How would you obtain Lineweaver-Burk double reciprocal plot from it ? 4

3. (*a*) Describe the process of TCA cycle. 7

(*b*) State the significance of Glycolysis. 3

(*c*) Critically discuss the regulatory steps of TCA cycle. 5

4. (*a*) Discuss the molecular mechanism of peptide hormone action. 5

(*b*) Describe the role of insulin in the metabolism of carbohydrate and lipid. 3 + 3

(*c*) State the functions of growth hormone. 4

GROUP – B

Answer any **five** questions from the following : 8 × 5

5. Describe the structure of mitochondria. Mention its major functions. 8

6. Discuss different types of connective tissue with distribution and functions. 8

7. Describe the fluid mosaic model of plasma membrane structure with proper diagram. 8

8. What is exocytosis ? Write a brief note on active transport. 8

9. What do you mean by 'vesicular trafficking' ? Briefly describe the transport mechanism of protein into Golgi complex. 2 + 6

10. What do you know about ligand receptor interaction ? Describe the structure and function of G-protein linked receptor. 8

11. Describe the different phases of cell cycle. Name the check points of this cycle. 8

12. Discuss the structure of skeletal muscle with proper diagram. 8

GROUP – C

Answer any **five** questions from the following : 4 × 5

13. Mention the functions of m RNA and t RNA. 4

14. State the function of telomere. What is histone ? 4

15. Briefly explain semiconservative replication. 4

16. What do you know about the different enkaryotic RNA polymerases ? 4

17. State Crick-Wobble hypothesis. 4

18. Give the structure and function of Lac operon. 4

19. Briefly describe the SOS repair pathway in *E. Coli*. 4