PG Odd Semester Examination, 2022

BIOTECHNOLOGY

(1st Semester)

Course No.: BTYCC-101

(Biological Chemistry)

Full Marks: 70

Pass Marks: 28

Time: 3 hours

The figures in the margin indicate full marks for the questions.

1. (a) Define carbohydrates. Classify them with examples. 2+4=6

   (b) Give the molecular structures of : 2x4=8

   (i) D-glucose (ii) L-alanine

   (iii) Palmitic acid (iv) Cholesterol

Or

2. (a) Illustrate with examples : 3x3=9

   (i) Stereoisomers

   (ii) Epimers

   (iii) Anomers

   (b) Discuss briefly the higher orders of protein structure. 5

3. (a) Define : (i) pH (ii) pKa 2x3=6

   (b) What is (i) isoelectric pH (ii) zwitterion? 2x3=6

(c) What is Henderson-Hasselbalch equation? 2

Or

4. (a) Define : (i) enthalphy (ii) entropy 3+3=6

   (b) State the first law of thermodynamics. What is Gibb's free energy? 4+4=8

5. (a) Define : 4x2=8

   (i) Enzymes

   (ii) Km

   (iii) Vmax

   (iv) Activation energy

   (b) Write a brief note on : 3x2=6

   (i) Enzyme specificity

   (ii) Enzyme-substrate complex

Or

6. (a) State the hyperbolic saturation kinetics of enzyme action. 8

   (b) State the effect of pH and temperature on enzyme action. 3x2=6

7. (a) Chalk out the steps of TCA cycle. 6

   (b) Differentiate between substrate level and oxidative phosphorylation with examples. 8

Or

8. (a) Differentiate between glycogenesis and glycogenolysis. 8

   (b) Discuss briefly the regulation of glycogen metabolism. 6

9. (a) Write short notes on : 4x2=8

   (i) Fluorescence

   (ii) Centrifugation

   (iii) Chromatography

   (iv) Electrophoresis

   (b) State the Beer-Lambert law and discuss its application in instrumentation. 6

Or

10. Explain the technique of SDS-PAGE mentioning its principles and application in biological science. 6+4+4=14

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