PG Odd Semester Examination, 2022

BIOTECHNOLOGY

(1st Semester)

Course No.: BTYCC-501

(Biological Chemistry)

Full Marks: 70

Pass Marks: 28

Time: 3 hours

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

1. (a) Give the structures of the following molecules (any four) 4x2=8

   (i) D-ghcopyranose

   (ii) Palmitic acid

   (iii) D-fructose

   (iv) Cholesterol

   (v) L-Valine

   (vi) Z-deoxyribose

   (vii) L-tryptophan

   (viii) ATP

   (b) Differentiate between the glycosidic bonds in amylose and cellulose. 5

Or

2. (a) Define (with examples) 3x2=6

   (i) Stereoisomerism

(ii) Epimerism

(iii) Anomerism

(b) Differentiate with examples : 2x4=8

(i) purines and pyrimidines

(ii) nucleosides and nucleotides

3. (a) What is a redox reaction? Give examples of redox reactions in the biological system. 2+4=6

(b) State the role of high energy phosphates in the biological system. 8

Or

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

(b) What is Gibb's free energy? State the principles of thermodynamics in the biological system. 2+6=8

5. (a) What are single displacement and double displacement bisubstrate reactions? 2½+2½=5

(b) Define : 3x3=9

(i) Km (ii) Vmax (iii) Activation energy

Or

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

(b) State the Michaelis-Menten equation exhibiting. 2x3=6

(i) first order kinetics

(ii) zero order kinetics

7. (a) Chalk out the steps of TCA cycle and mitochondrial electron transport chain. 5+5=10

(b) What are ketone bodies? 4

Or

8. (a) Chalk out the steps of pentose phosphate pathology. 8

(b) Give the regulation of glycogen metabolism. 6

9. Write brief notes on any four of the following : 3½x4=14

(i) Flurescence (ii) Centrifugation, (iii) Beer-Lambert Law, (iv) TLC (v) Z-D gel electrophoresis

Or

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

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