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Q 2300

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Third Semester

Industrial Bio-technology

IB 231 — BIO-CHEMISTRY

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A --- (10 × 2 = 20 marks)

1. Write Haworth structure for glucose.
2. What are structural differences that characterize starch and glycogen?
3. What are essential fatty acids? Name and give the structure of any one.
4. Differentiate (a) apoprotein and holoprotein (b) globular and fibrous protein.
5. Describe two types of bonds involved in DNA. What functions do they serve?
6. Draw the structure of ATP and state its important biological functions.
7. Give three irreversible reactions in Glycolysis and state their significance.
8. Explain the difference between oxidative phosphorylation and substrate level phosphorylation
9. Outline the role of transaminases in amino acid metabolism.
10. Draw the purine ring and list the precursors that provide carbon and nitrogen atoms of the purine ring.

PART B -- (5 × 16 = 80 marks)

11. (a) Give the structure and function of the following compounds :
- (i) Chondroitin sulfate (4)
 - (ii) Hyaluronic acid (4)
 - (iii) Chitin (4)
 - (iv) Sedoheptulose (4)

Or

- (b) Outline the structure and function of the following classes of lipid
(i) Phospholipids (ii) Steroids (iii) triacylglycerol (iv) Sphingolipids
12. (a) (i) Sketch the titration curve for Histidine and Lysine. (6)
- (ii) Describe different levels of organization of protein structure. (10)

Or

- (b) Outline the reactions of urea cycle and show its interconnection with TCA cycle.
13. (a) (i) Outline the steps involved in β -oxidation of fatty acids. (12)
- (ii) Calculate number of ATP produced in total oxidation of Palmitic acid. (4)

Or

- (b) Elaborate the steps involved in salvage pathway of nucleotide synthesis.
14. (a) (i) Describe TCA cycle and state its significance in central metabolism. (12)
- (ii) What are anaplerotic reactions? Explain with example. (4)

Or

- (b) (i) Describe the additivity of ΔG values for coupled reactions and the ability of thermodynamically favorable reaction to drive an unfavorable one. (4)
- (ii) Explain in detail about electron transport chain. (12)
15. (a) Describe the pentose phosphate pathway and its metabolic role. (16)

Or

- (b) (i) Write a note on RNA. (8)
- (ii) List the important features of Watson-Crick DNA double helix. (8)
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