R09

Set No. 2

II B.Tech I Semester Examinations,May/June 2012
BIOCHEMISTRY
Bio-Technology

Time: 3 hours   Max Marks: 75

Answer any FIVE Questions
All Questions carry equal marks
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1. Discuss about a Cahn-Ingold and Prelog Sequence rule for configuration of Chiral centres in a molecule. [15]

2. Define fatty acids and differentiate between saturated and unsaturated fatty acids. [15]

3. Explain in detail about the phases of protein synthesis. [15]

4. Write short notes on:

   (a) Deoxy sugars

   (b) Glycogen synthesis

   (c) Sugar esters

   (d) UDP-Glucose. [15]

5. Explain the interrelationship between Gibbs free energy and reduction potential. [15]

6. Explain about the regulation of purine, pyramidines synthesis. [15]

7. What is a buffer.Discuss why a buffer show a particular pH range where it exhibits buffering but not beyond the limit. [15]

8. Write an account on: (a) Photophosphorylation (b) Urea cycle. [15]

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1. Write a short note on:

   (a) Ribose and deoxyribose

   (b) Hydrogen bonds

   (c) Nucleosides.   [15]

2. Discuss about different types of thermodynamic systems and components of them.
                                                           [15]

3. Write about:

   (a) Isoelectric point

   (b) Hill reaction

   (c) Transamination.   [15]

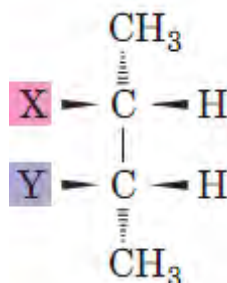4. Explain about ionisation of water and how to analyse it quantitatively.   [15]

5. Explain:

   (a) α - helix and β - pleated sheet

   (b) Structure of myoglobin.   [15]

6. (a) Define stereoisomerism.
   (b) How many stereoisomers are possible with this structure? Explain the Enantiomers
       and diastereomer pairs possible with this structure.   [15]

7. Explain a metabolic pathway for the conversion of alanine to Glucose.   [15]

8. Define ketogenesis and explain in detail the biosynthesis and utilization of ketone bodies.   [15]

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1. Write about:

    (a) Modified pyramidines

    (b) Glycoproteins.   [15]

2. Write the chemical reactions to get various types of acids that can be obtained from D-Glucose.   [15]

3.   (a) Derive Handerson-Hasselbalch equation for a weak acid HA.

    (b) What is the pH of a weak acid solution HA when the ratio of [A-] to [HA] is 100:1?   [15]

4. Discuss about different Organic molecules ,functional groups and linkages commonly found in Biological systems.   [15]

5. Why Essential fatty acids are important? What are the functions of essential fatty acids? Write the structure of essential fatty acids?   [15]

6. Discuss how the oxidation of biomolecules is coupled with the production of high energy phosphates.   [15]

7. What are glucogenic and ketogenic amino acids and briefly account on entry of the 20 amino acids into the citric acid cycle.   [15]

8. Differentiate between the enzymes and inhibitors involved in prokaryotic and Eukaryotic protein photosynthesis.   [15]

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1. Describe the Shikimate pathway for the production of amino acids?   [15]

2. Describe the role of PRPP in purine and pyramidine synthesis?   [15]

3. Discuss about the auxiliary properties of one component system.   [15]

4. Explain the role of Hydrogn bonding in macromolecules.   [15]

5. What is cholesterol? Discuss its chemistry and sketch its physiological functions. [15]

6. (a) Write the structure of a peptide bond and represent it in cis and trans configuration.

   (b) Write Ficher's projection formula for D-Glyceraldehyde.   [15]

7. Explain why carbohydrates are immediate sources of energy with the help of metabolism.
          [15]

8. Define Zwitter ion and explain in detail about the acid-base properties of amino acid with respect to alanine titration curve.   [15]

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