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2014/2015 HARMATTAN SEMESTER EXAMINATION

Course Code: MDB 200/BCH 201 *Time Allowed:* 3 Hours

Date : 19th June, 2015

Course Title: General Biochemistry I *Instruction:* Answer All Questions.

1. (a) Using appropriate examples and equations, distinguish between a conjugate base and a conjugate acid.
   (b) What is pH?
   (c) Determine the pH of 0.05 mol. dm^{-3} solution of ethanolamine, given that the K_b value of ethanolamine is 2.8×10^{-5}.

2. a. Explain the following terms
   i. Enantiomers
   ii. Anomers
   iii. Epimers
   iv. Diastereoisomers

   b. Show a specific glycosidic linkage in a named sugar

3. a. With appropriate examples, enumerate the functions of nucleotides in the cell.
   b. Draw the structure of a named nucleotide
   c. Highlight the differences between DNA and RNA.

4. a. Write short note on lipid solubility and structure
   b. Differentiate between the following pairs
   i. Fats and oils
   ii. Sphingolipid and phospholipid
   iii. Estrogen and androgen
   iv. LDL and HDL
   v. Essential fatty acids and non essential fatty acids.

5. A peptide was identified to contain the following amino acids
   Alanine, Valine, Glycine, Histidine, Methionine, Glutamine, Proline
   i. Classify the amino acids on the basis of polarity
   ii. Using appropriate structures draw five possible peptides that can be formed from the amino acid components
   iii. Name the peptides
   iv. What is the primary bond in the peptides drawn above?
   v. What other possible bonds may be present in the peptides?