



HDR-1603220001010400 Seat No. _____

B. Sc. (Bioinformatics) (Sem. I) Examination

November / December – 2017

BI-104 : Fundamentals of Biochemistry and Biophysics

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) All questions are compulsory.
(2) The right side figure indicates total marks of the question.

- 1 The following questions from Unit -1. **14**
- (a) Attempt the following objective Questions : **4**
- (1) Carbon needs _____ electrons to complete its valence shell.
- (2) The H-O-H bond angle in water molecule is
- (3) A water strider can walk across the surface of a small pond which of the effects is produced by water?
- (4) The pH of a solution is determined by _____ concentration
- (b) Attempt any **one** out of two from the following : **2**
- (1) Importance of water for living organism
- (2) ATP structure
- (c) Attempt any **one** out of two from the following : **3**
- (1) Classification of Vitamins and explain fat soluble vitamins
- (2) Bio energetics and High energy molecules.
- (d) Attempt any one out of two from the following : **5**
- (1) Biological covalent bonds
- (2) Biological buffer system explains with any one in details

- 2** The following questions from Unit - 2 : **14**
- (a) Attempt the following objective Questions : **4**
- (1) An enzyme that joins the ends of two strands of nucleic acid is _____
 - (2) Hexokinase ($\text{Glucose} + \text{ATP} \rightarrow \text{DGlucose-6-P} + \text{ADP}$) belongs to which class of enzyme _____
 - (3) Non-protein part of an enzyme is called _____
 - (4) The Michael is-Menton equation relates the rate of an enzyme- catalyzed reaction to Substrate concentration (True or False)
- (b) Attempt any **one** out of two from the following : **2**
- (1) Coenzymes and Cofactors.
 - (2) Zymase and zymogen
- (c) Attempt any **one** out of two from the following : **3**
- (1) Enzyme function.
 - (2) Induce-fit model
- (d) Attempt any **one** out of two from the following : **5**
- (1) Enzyme classification
 - (2) Regulation of enzyme activity
- 3** The following questions from Unit - 3 : **14**
- (a) Attempt the following objective Questions **4**
- (1) Net ATP generation on complete oxidation of stearic acid
 - (2) $\Delta 9$ indicates a double bond between carbon atoms of the fatty acids at _____
 - (3) D-Glucose and D mannose are epimer (True or False)
 - (4) The number of molecules of ATP produced by the total oxidation of acetyl CoA in TCA cycle is _____
- (b) Attempt any **one** out of two from the following : **2**
- (1) Racemization
 - (2) Physical properties of fat and oils

- (c) Attempt any **one** out of two from the following : **3**
- (1) Explain lipoprotein
 - (2) Homopolysaccharide
- (d) Attempt any **one** out of two from the following : **5**
- (1) Explain Monosaccharide in details
 - (2) Krebs cycle.
- 4** The following questions from Unit - 4 : **14**
- (a) Attempt the following objective Questions : **4**
- (1) The naturally occurring form of amino acid in proteins which form L or D ?
 - (2) Amino acids are joined by _____ bond.
 - (3) A dipeptide has _____ amino acids and __ peptide bond
 - (4) Ninhydrin with evolution of CO₂ forms a blue complex with _____
- (b) Attempt any **one** out of two from the following : **2**
- (1) Aromatic amino acids
 - (2) mRNA
- (c) Attempt any **one** out of two from the following : **3**
- (1) Difference between DNA and RNA
 - (2) Classification of amino acids according to the polarity of the side chain R.
- (d) Attempt any **one** out of two from the following : **5**
- (1) Explain DNA
 - (2) Explain Function of proteins in details
- 5** The following questions from Unit - 5 : **14**
- (a) Attempt the following objective Questions : **4**
- (1) Hemoglobin is the example of _____ protein structure.
 - (2) Which Nucleotide form hydrogen bonds with thymine in DNA?

(3) What term is used to describe the process by which proteins are synthesized from a genetic code?

(4) The first amino acid in a polypeptide chain is _____

(b) Attempt any **one** out of two from the following : **2**

(1) Properties of DNA double Helix

(2) Sedimentation

(c) Attempt any **one** out of two from the following : **3**

(1) Secondary structure of proteins.

(2) Edman degradation method

(d) Attempt any **one** out of two from the following : **5**

(1) Techniques to study biomolecules

(2) Describe structure and types of DNA.
