



PBM-1603220001010400 Seat No. _____

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

November / December - 2018

BI - 104 : Fundamentals of Biochemistry & Biophysics

(New Course)

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

[Total Marks : 70

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

- 1 The following questions from Unit - 1 14
- (a) Attempt the following objective questions : 4
- (1) How many pyrimidine bases are in GATCAATGC nucleotide sequence ?
- (2) Higher the bond strength lower it requires the bond energy (True/False).
- (3) Standard conditions pure water is correctly represented by pH _____ and temperature _____ °C.
- (4) A segment of DNA has 120 adenine and 120 cytosine bases. The total number of nucleotides present in the segment is _____.
- (b) Attempt any **one** out of two from the following question. 2
- (1) Entropy
- (2) Synonyms of Vitamin B complexes.
- (c) Attempt any **one** out of two from the following question. 3
- (1) Classification of Vitamins and explain fat soluble vitamins.
- (2) Describe concept of buffer and explain any one biological buffer system.

- (d) Attempt any **one** out of two from the following question. **5**
- (1) Properties of water.
 - (2) Explain non-covalent bonds.
- 2** The following questions from Unit - 2 **14**
- (a) Attempt the following objective questions. **4**
- (1) The combination of Apoenzyme and coenzyme = _____.
 - (2) An enzyme that joins the ends of two strands of nucleic acid is _____.
 - (3) Which enzyme hydrolyses starch to maltose ?
 - (4) The catalytic efficiency of two distinct enzymes can be compared based on which of Michaelis-Menton factor.
- (b) Attempt any **one** out of two from the following : **2**
- (1) Zymase and Zymogen.
 - (2) Active site.
- (c) Attempt any **one** out of two from the following : **3**
- (1) Enzyme nomenclature.
 - (2) Allosteric enzyme regulation.
- (d) Attempt any **one** out of two from the following : **5**
- (1) Explain Enzyme classification with one example in each class.
 - (2) Regulation of enzyme activity.
- 3** The following questions from Unit - 3 **14**
- (a) Attempt the following objective questions : **4**
- (1) $\Delta 9$ indicates a double bond between carbon atoms of the fatty acids at _____.
 - (2) D-Glucose and D mannose are epimer (True or False)

- (3) Glycosphingolipids are a combination of Ceramide with one or more sugar residues (True or False)
- (4) Sphingomyelins contain a complex amino alcohol named as _____.
- (b) Attempt any **one** out of two from the following : **2**
- (1) Cytochrome C
 - (2) Racemization
- (c) Attempt any **one** out of two from the following : **3**
- (1) Structural properties of monosaccharides.
 - (2) Explain lipoprotein.
- (d) Attempt any **one** out of two from the following : **5**
- (1) Glycolysis.
 - (2) Explain phospholipids
- 4 The following questions from Unit - 4 **14**
- (a) Attempt the following objective questions. **4**
- (1) A five carbon sugar lacking a hydrogen at the number 2 carbon is found in _____.
 - (2) Amino acids are joined by _____ bond.
 - (3) The most abundant free nucleotide in mammalian cells is _____.
 - (4) The amino acid containing an indole ring is _____.
- (b) Attempt any **one** out of two from the following : **2**
- (1) Pyrimidine.
 - (2) Aromatic amino acids
- (c) Attempt any **one** out of two from the following : **3**
- (1) Explain degradation of Amino Acids Degradated to Oxaloacetate.
 - (2) Difference between DNA and RNA.

- (d) Attempt any **one** out of two from the following : **5**
- (1) Explain amino acids classification based on side chain R.
 - (2) Explain purine synthesis.
- 5** The following questions from Unit - 5 **14**
- (a) Attempt the following objective questions : **4**
- (1) The length of one turn of DNA is _____ Å.
 - (2) Left handed double helix is present in _____ DNA.
 - (3) A segment of DNA contains 600 nucleotides, of which 200 have guanine base. How many thymine bases are present in this segment of DNA ?
 - (4) What term is used to describe the process by which proteins are synthesized from a genetic code ?
- (b) Attempt any **one** out of two from the following : **2**
- (1) A-DNA
 - (2) Sanger's method
- (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) Structure of protein.
 - (2) Describe structure and types of DNA.