



MBE-003-006104 Seat No. _____

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

November / December – 2016

**BI - 104 : Fundamentals of Biochemistry and Biophysics
(Old Course)**

Faculty Code : 003

Subject Code : 006104

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

[Total Marks : 70

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

PART - A

- 1** Answer the following short questions : (all compulsory) **20**
- (1) The number of molecules of ATP produced by the total oxidation of acetyl CoA in TCA cycle is _____.
 - (2) Conversion of glucose to glucose-6-phosphate in human tissue is by _____.
 - (3) Ninhydrin with evolution of CO₂ forms a blue complex with _____.
 - (4) Which type of RNA is smallest ?
 - (5) Amino acids are joined by _____ bond.
 - (6) A five-carbon sugar lacking a hydrogen at the number 2 carbon is found in _____.
 - (7) Left handed double helix is present in _____ DNA.
 - (8) What term is used to describe the process by which proteins are synthesized from a genetic code ?
 - (9) A short length of DNA molecule has 80 Thymine and 80 Guanine. The total number of nucleotide in the DNA fragment is _____.
 - (10) The first amino acid in a polypeptide chain is _____.
 - (11) Higher the bond strength lower it requires the bond energy.
(True or False)

- (12) Which type of bond occurs oppositely charged ions attraction ?
- (13) Standard conditions for biochemical reactions are correctly represented by pH _____ and temperature _____ °C
- (14) What type of chemical bond holds the atoms together within a water molecule ?
- (15) Which enzyme hydrolyses starch to maltose ?
- (16) Hexokinase ($\text{Glucose} + \text{ATP} \rightarrow \text{Glucose-6-P} + \text{ADP}$) belongs to which class of enzyme _____
- (17) The combination of Apoezyme and coenzyme = _____
- (18) Blocking of enzyme action by blocking its active sites is _____ inhibition.
- (19) Gangliosides are complex glycosphingolipids found in _____ human body.
- (20) Oleic acid is the example of a saturated fatty acid (True or False).

PART - B

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| 2 | <p>(a) Explain any three :</p> <ol style="list-style-type: none"> (1) Active site (2) Aromatic amino acids (3) ATP structure (4) Dansyl chloride method (5) Define rRNA (6) Minerals | 6 |
| | <p>(b) Explain any three :</p> <ol style="list-style-type: none"> (1) Classification of lipids (2) Classification of Vitamins (3) Describe structure and types of DNA (4) Describe t-RNA (5) DNA supercoiling (6) Conformational Coupling Hypothesis. | 9 |
| | <p>(c) Attempt any two :</p> <ol style="list-style-type: none"> (1) Carbohydrate classification (2) Describe concept of buffers (3) Describe types of methods for determination of Biomolecules explain any one in detail. (4) Enzyme incubation (5) Lipid function. | 10 |

- 3** (a) Explain any **three** : **6**
- (1) Oxidoreductases
 - (2) Phosphodiester bond
 - (3) Sedimentation
 - (4) Triglycerides
 - (5) Waxes
 - (6) Coenzymes and Cofactors
- (b) Explain any **three** : **9**
- (1) Effects of temperature and pH on enzyme.
 - (2) Enzyme function
 - (3) Explain Glycolysis
 - (4) Function of proteins
 - (5) High energy molecules
 - (6) DNA polymorphism
- (c) Attempt any **two** : **10**
- (1) Mechanism of enzyme action
 - (2) NA classification
 - (3) Overview of Biomolecules
 - (4) Oxidation of amino acids
 - (5) Types of proteins structure
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