



HCW-003-001318 Seat No. _____

B. Sc. (Sem. III) (CBCS) Examination

October / November - 2017

BT - 301 : Basic Aspects of Cellular Metabolism

Faculty Code : 003

Subject Code : 001318

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

[Total Marks : 70

Instructions :

- (1) Question-I covers compulsory one mark questions of 20 marks.
- (2) Figures in the right indicate marks of the question.

1 One mark objective questions : 20

1. Enzymes affect the rate of biochemical reaction and not the direction of the reaction. TRUE/FALSE.
2. Apoenzyme + Coenzyme \rightarrow _____.
3. _____ enzyme catalyze the synthesis of new bonds, coupled to the breakdown of ATP.
4. _____ equation defines the quantitative relationship between the rate of enzyme reaction and the substrate concentration.
5. Allosteric enzymes function through reversible, noncovalent binding of a regulatory metabolite called a modulator or effector. TRUE/FALSE.
6. Proteins are linear sequences of amino acids linked together by _____ bonds.
7. The _____ structure of a globular protein is determined by its amino acid sequence.
8. The ability of proteins to behave as acid and base is known as _____.
9. _____ are proteins that interact with partially folded polypeptides, facilitating correct folding pathways.
10. Who proposed the "Lock and Key" model to study enzyme-substrate interactions.

11. Signals from the exterior of a cell are mediated to the inside of that cell by DNA-protein interactions of the signalling molecules. TRUE/FALSE.
12. Metabolism = Anabolism and _____.
13. One glucose molecule produces _____ number of ATP, during glycolysis.
14. In which phase of glycolysis high energy phosphate bonds are formed (ATP) and energy is stored ?
15. _____ is the end product of amino acid metabolism.
16. In photosynthesis _____ reaction use the NADPH and ATP to synthesize carbohydrate from CO₂ and H₂O.
17. _____ is a metabolic pathway that results in the generation of glucose from non-hexose precursors.
18. _____ is the inability of the body to use the simple sugar galactose, causing the accumulation of galactose-I -phosphate in the body.
19. Who devised the fluid mosaic model of biological membrane ?
20. G-Protein coupled receptors are found in prokaryotes. TRUE/FALSE.

- 2** (A) Write any three out of six : **6**
1. Define: Enzyme and isoenzyme.
 2. Define : Biocatalyst and chemical catalyst.
 3. Write M-M equation.
 4. Define: Glycolysis.
 5. Define: Anabolism and Catabolism.
 6. Define: molecular chaperon.
- (B) Write any three out of five : **9**
1. Describe the general properties of enzymes.
 2. Describe Enzyme Inhibition.
 3. Describe DNA-Protein Interaction.
 4. Explain Coenzymes and Cofactors.
 5. Describe Allosteric Enzyme.

- (C) Write any two out of four : 10
1. Write a note on classification and nomenclature of enzyme.
 2. Derive Michaelis-Menten equation.
 3. Write a note on glycolysis with energetics.
 4. Write a note on Protein sequencing.
- 3 (A) Write any three out of six : 6
1. What is Transamination ?
 2. What is Gluconeogenesis ?
 3. Describe the energetics of TCA cycle.
 4. Define : Active and Passive transport.
 5. Define : Phagocytosis and Pinocytosis.
 6. What is inborn errors in metabolism?
- (B) Write any three out of six : 9
1. Explain Decarboxylation.
 2. Describe Oxidative Phosphorylation.
 3. Explain in short photosynthesis in plants.
 4. Explain Fluid Mosaic Model of plasma membrane.
 5. Explain any one inborn error metabolic disease.
 6. Explain the C₄ cycle.
- (C) Write any two out of five : 10
1. Write a note on kreb cycle.
 2. Explain in detail P-oxidation.
 3. Write a note on "The mechanism of transportation".
 4. Write a note on urea cycle.
 5. Write a note on signal transduction.
-