KG-397 Seat No._____

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

October / November - 2017

CC-I-3 : Cellular Metabolism-I

Time : 3 Hours] [Total Marks : 70

1 (a) MCQ and very short questions : 15

(1) Redox potential with positive value indicates _____

(A) More affinity for electrons

(B) Less affinity for electrons

(C) No affinity for electrons

(D) All

(2) An eukaryotic cell is performing a linear metabolic pathway which incompletely oxidizes glucose into two pyruvic acid molecules. It is located in _____ of cell.

(A) Mitochondrial matrix

(B) Cytoplasm

(C) Cell membrane

(D) None

(3) For any biochemical reaction greater positive value of equilibrium constant means

(A) It must be exergonic reaction.

(B) It must be endergonic reaction.

(C) It must be spontaneous reaction

(D) (A) & (C) both

(4) An uncompetitive inhibitor can bind to

(A) Enzyme active site only

(B) Enzyme substrate complex

(C) Enzyme product complex

(D) Any site of enzyme

(5) How many ATP can be produced in a glycolytic pathway by substrate level phosphorylations ?

(A) 1 (B) 2

(C) 12 (D) 38

(6) In the following graph Y axis represents velocity/ enzyme activity while X axis represents

(A) Substrate concentration

(B) pH

(C) Temperature

(D) (B) & (C) both

(7) _____ catalyzes irreversible steps of glycolysis.

(A) Hexokinase (B) PFK I

(C) Pyruvate kinase (D) All

(8) _____ is example of covalent modification as regulation of enzyme.

(A) Activation of phosphofructokinase I by AMP

(B) Change in shape of enzyme by modulator

(C) Phosphorylation of enzyme

(D) (A) & (B) both

(9) Decarboxylation is observed in _____ anaerobic respiration.

(A) Lactate fermentation

(B) TCA cycle

(C) Ethanol fermentation

(D) (B) & (C) both

(10) Which of the following reaction of TCA cycle involves substrate level phosphorytion ?

(A) Formation of iso citrate from citrate.

(B) Dehydrogenation of succinate

(C) Oxidation of malate into OAA

(D) Formation of succinate

(11) Define Enzyme

(12) Define Entropy

(13) What is location of Gluconeogenesis ?

(14) _____ CO_2 is released in Pentose Phosphate Pathway.

(15) How many carbons are present in Oxaloacetate molecule ?

2 Give short note on any **five** of the following : **25**

(1) Fate of pyruvate under anaerobic condition.

(2) Equilibrium constant.

(3) Covalent modification as regulation of enzyme activity

(4) Regulation of glycolysis.

(5) Double reciprocal plot for effect of substrate concentration on enzyme activity

(6) Briefly explain : Enthalpy, system, Entropy, Exergonic reaction, Endergonic reaction.

(7) Balance sheet of glycolysis for ATP generation.

3 Give detailed note on any **three** : 30

(1) TCA as a catabolic pathway.

(2) Factors affecting enzyme catalyzed reaction

(3) Explain standard free energy change, actual free energy change and their relationship with equilibrium constant.

(4) Gluconeogenesis

(5) Classification of enzymes.