

(15 & A-12) Seat No: _____

No. of pages: 2

SARDAR PATEL UNIVERSITY
M. Sc (Int.) Biotechnology: Semester IV Examination (NC)
Tuesday, 18th October, 2016
Time: 10.00 am to 1.00 pm
Sub: PS04CIGB01: Bioenergetics

Total Marks : 70

Q-1 Give the answer by choosing appropriate option.

[8 X 1]

- (1) The system releases free energy and the free energy change is negative in _____.
(a) Endothermic reaction (b) Exothermic reaction (c) Endergonic reaction
(d) Exergonic reaction
- (2) Which of these enzyme reaction is reversible in glycolysis?
(a) Phosphofructokinase (b) Hexokinase (c) 3-phosphoglycerate kinase
(d) All of these
- (3) How many FADH₂ are produced in glycolysis.
(a) 2 (b) 1 (c) 3 (d) None of these
- (4) The major site for glycolysis is _____.
(a) Liver (b) Mitochondrial matrix (c) Chloroplast (d) None of these
- (5) _____ enzyme converts Fumarate to Malate.
(a) Aconitase (b) Fumerase (c) Malate dehydrogenase (d) hexokinase
- (6) Orotic acid is an intermediate in the catabolism of _____.
(a) Guanine (b) Uracil (c) Both a & b (d) None of the these
- (7) Following is the precursor to glycogen in glycogen synthase reaction
(a) Glucose 6-phosphate (b) Glucose 1-phosphate (c) UDPG (d) UTPG
- (8) The amount of energy released after hydrolysis of one Adenosine triphosphate is _____.
(a) 7.3 kcal (b) 73 kcal (c) 730 kcal (d) 1000 kcal

Q-2 Answer the following questions in short. (Any seven)

[7 X 2]

- (1) Define Exergonic and exothermic reactions.
- (2) Explain biological oxidation-reduction with one example
- (3) Discuss ATP production during Tricarboxylic acid cycle.
- (4) List the enzymes involved in glycogenesis.
- (5) Why TCA cycle is called as an amphibolic cycle?

(P.T.O.)

- (6) Enlist structural components of Electron Transport Chain.
- (7) Write thermodynamics laws.
- (8) How GMP is synthesized from parent purine nucleotide?
- (9) Explain purines and pyrimidines with examples.
- Q-3** (a) Write a short note on chemiosmotic theory and conformational changes. [06]
- (b) Explain standard redox potential (E^0) and the experiment for its measurement using a salt bridge? [06]
- OR**
- (b) Discuss hydrolysis of ATP and Phosphofructokinase. [06]
- Q-4** (a) Write a short note on glycolysis and discuss its energetics. [06]
- (b) Discuss synthesis of glucose from pyruvate. [06]
- OR**
- (b) Briefly explain Pentose phosphate pathway. [06]
- Q-5** (a) Give an explanatory note on Krebs's cycle. [06]
- (b) Describe regulation of TCA cycle in detail. [06]
- OR**
- (b) Write a short note on Glyoxylate cycle. [06]
- Q-6** (a) Outline the denovo pathway for Inosine Monophosphate synthesis. [06]
- (b) Discuss regulations of purine and pyrimidine synthetic pathways. [06]
- OR**
- (b) Discuss degradation of purine nucleotides to uric acid. [06]

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 (2)