

SARDAR PATEL UNIVERSITY
M. Sc (Int.) Biotechnology : Semester IV Examination
Tuesday, 4th December, 2012
Time : 2.30 pm to 5.30 pm
Sub : PS04CIGB01: Bioenergetics

Total Marks : 70

Q-1 Give the answer by choosing appropriate option.

- (1) The standard free energy of hydrolysis of phosphocreatine is
 (a)- 43 kJ/mol (b) - 49 kJ/mol (c) - 30 kJ/mol (d) None of these
- (2) The system gains free energy and free energy change is positive in...
 (a) Endergonic (b) Exergonic (c) Exothermic (d) Endothermic reactions
- (3) How many ATPs are produced when 2 glucose molecules enter in glycolysis.
 (a) 36 (b) 42 (c) 8 (d) None of these
- (4) One of the following enzymes in TCA catalysis an irreversible reaction
 (a) Succinate thiokinase (b) Hexokinase (c) Phosphofructokinase (d) None of the above
- (5) The number of ATP is produced when a molecule of acetyl CoA is oxidized through citric acid cycle.
 (a) 12 (b) 24 (c) 20 (d) 38
- (6) Following is the regulatory enzyme of glycolysis
 (a) Citrate synthase (b) hexokinase (c) Enolase (d) none of above
- (7) A defect in HGPRT enzyme causes...
 (a) Reye's syndrome (b) Orotic aciduria (c) Lesch-Nyhan syndrome
 (d) None of these
- (8) ----- is the intermediate between Inosine monophosphate and guanosine monophosphate.
 (a) Adenosine monophosphate (b) Xanthine (c) Xanthosine monophosphate
 (d) None of these

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

- (1) What is Cori cycle?
- (2) Differentiate between glucokinase and hexokinase

- (3) Explain substrate level phosphorylation.
- (4) Discuss the energetics of TCA cycle.
- (5) What is the role of HGPRT in purine metabolism?
- (6) Explain-The citric acid cycle is amphibolic in nature.
- (7) Define entropy and enthalpy.
- (8) Explain two fundamental laws of thermodynamics.
- (9) Write the role of regulatory enzyme CPS-II in pyrimidine metabolism.

- Q-3 (a) Describe hydrolysis of ATP and free energy change. [06]
(b) Explain the measurement of the standard reduction potential of a redox pair. [06]

OR

- (b) Explain standard free energy change by giving appropriate example. [06]

- Q-4 (a) What is glycolysis? Discuss irreversible steps of glycolysis. [06]
(b) Give an overview of hexose monophosphate shunt and its significance. [06]

OR

- (b) Give a brief account on glycogenesis. [06]

- Q-5 (a) Briefly discuss the steps of Kreb's cycle. [06]
(b) Explain glyoxylate cycle in brief. [06]

OR

- (b) Give a detail note on regulation of TCA cycle. [06]

- Q-6 (a) Write an account of the biosynthesis of inosine monophosphate. [06]
(b) Explain the metabolic pathway for the synthesis of Uridine monophosphate. [06]

OR

- (b) Write a note on degradation of purines. [06]
