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SARDAR PATEL UNIVERSITY No. of Printed Pages : 2
M. Sc. (I Semester) Biochemistry (under CBCS) Examination
Monday, 25th March 2019.
Time: 10.00 am to 1.00 p.m.
SEAT No. _____ Paper: PS01CBIC23 (Cellular Metabolism)

Total Marks: 70

Q1. Write the most appropriate answer for the following multiple choice questions: (8)

1. What could be the fate of glucose -6-phosphate in a liver cell?
(a) Glycolysis
(b) Glycogenesis
(c) Pentose phosphate pathway
(d) all of the above
2. Acetyl-coA can be produced in cell from
(a) Pyruvate
(b) carbon skeleton of amino acids
(c) Palmitoyl-coA
(d) All of the above
3. Glycolysis is inhibited by
(a) Excess of ATP
(b) Excess of citrate
(c) Lack of NAD⁺
(d) All of the above
4. Biosynthesis of ketone bodies is favoured in cells under _____ conditions.
(a) hypoglycemic (b) diabetic (c) starvation (d) all of the above
5. Which of the following molecule gives maximum energy upon oxidation?
(a) Glucose (b) Maltose (c) Alanine (d) Palmitoyl-coA
6. Glutamine is synthesized in the liver by the action of enzyme
(a) Transaminase
(b) Glutamine synthetase
(c) α - ketoglutarate dehydrogenase
(d) none of the above
7. Citrate is broken down into cell cytosol to Acetyl-coA and oxaloacetate by
(a) Citrate hydratase
(b) Citrate is not broken down in cytosol
(c) Citrate lyase
(d) Citratase
8. The energy released by the breakage of thioester bond of succinyl-CoA in citric acid cycle is used to synthesize
(a) a phosphoanhydride bond in GTP
(b) a thioester bond in Acetyl-CoA
(c) an ester bond in fatty acyl-CoA
(d) the primary metabolite

Q2. Answer any SEVEN of the following questions briefly: (7 X 2 = 14 Marks)

- (i) Differentiate between the Hexokinase and Glucokinase.
- (ii) Which enzyme of glycolysis is halted for the want of NAD⁺? How NAD⁺ is made available?
- (iii) What is the importance of PEP carboxykinase in metabolism?
- (iv) What are the intracellular sites of carbamoyl phosphate synthase 1 and 2 reaction?
- (v) Explain ω -oxidation of fatty acids in ER. What are essential fatty acids? Give examples.
- (vi) Differentiate between free energy change and standard free energy change.
- (vii) An amino acid that yields acetoacetyl-CoA during catabolism is glucogenic or ketogenic?
- (viii) In which cells glucose -6- phosphatase enzyme is found? What is its subcellular location?
- (ix) Name the amino acid sequence of peptide ADQCTWYR

(1)

(P.T.O.)

(Contd.....2)

- Q3. (a) Explain: Biological energy transformations obey the laws of thermodynamics. (6)
(b) Write a detailed note on the carriers involved in electron transport chain. (6)

OR

- (b) List the tissue where Pentose Phosphate pathway is found active and explain the reactions and importance of this pathway. (6)
- Q 4. (a) What are ketone bodies? Under which physiological conditions are they produced? (6)
(b) Explain the oxidation of Myristoyl-coA and calculate the energy production by β - oxidation. (6)

OR

- (b) Explain the pathway of ω - oxidation of fatty acids. (6)
- Q 5. (a) Give any two examples and explain transamination reactions. (6)
(b) Explain how urea cycle is regulated. (6)

OR

- (b) Explain the linkage between urea cycle and TCA cycle. (6)
- Q .6 (a) Explain the pathway of purine degradation. (6)
(b) Write a detailed note on regulation of purine biosynthesis. (6)

OR

- (b) What is salvage pathway? Give the salvage pathway for pyrimidine biosynthesis. (6)

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(2)