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No. of Printed Pages: 03

SARDAR PATEL UNIVERSITY
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M.Sc. (I Sem) Biochemistry
PS01C BIC03 – Cellular Metabolism
4 Dec 2012, Tuesday,10.30 a. m. to 1.30 p.m.

Total Marks: 70

Q I (1x8=8)

1. Glycolysis is inhibited by
   a) Excess of ATP
   b) Lack of NAD+
   c) Excess of citrate
   d) all of the above

2. Phosphofructokinase, the major flux-controlling enzyme of glycolysis is allosterically inhibited by ___ and activated by ___.
   a) AMP , Pi
   b) ADP AMP
   c) Citrate ATP
   d) ATP PEP

3. The rate of the FA oxidation can be increased by increasing _____ in the diet.
   a) PUFA
   b) MUFA
   c) Carnitine
   d) creatinine

4. The increased LDL in the blood due to lipid rich diet is uptaken and reprocessed by
   a) Small blood capillaries
   b) Adipose tissue
   c) Liver
   d) Brown adipose tissue

5. Micelles of fatty acids in water are organized such that the ___ face the solvent and the ___ are directed toward the interior
   a) hydrophilic heads; hydrophobic tails
   b) carboxylic acid groups; hydrocarbon chains
   c) hydrophobic tails; hydrophilic heads
   d) Both A And B are both correct

6. When blood glucose level becomes lower than normal, it is replenished by glycogen break down from
   a) Liver
   b) Muscle
   c) Liver or Muscle
   d) None of the above

7. á helix most closely matches the level of protein structure described below.
   a) Primary stucture
   b) Secondary stucture
   c) Tertiary stucture
   d) Quternary structure

8. The major control of de novo pyrimidine nucleotide synthesis in man is:
   a) feedback inhibition of aspartate transcarbamylase.
   b) availability of N-acetyl glutamate.
   c) substrate availability.
   d) competitive inhibition of carbamoyl phosphate synthetase II.

QII Answer any seven questions (2x7=14)

a) Why Glucose -6-phosphatase and Glucokinase don't make futile cycle in liver cell cytoplasm?
b) How does Acetyl-coA come to cytoplasm for FA biosynthesis?
c) What are anaploratic reactions? Give examples
d) Which is the regulatory enzyme between fatty acid oxidation and fatty acid biosynthesis?
e) What is the end product of glycolysis in erythrocytes and why?
f) Differentiate the reactions catalysed by carbamoyl phosphate synthase I and II
g) What is the difference in Free energy and standard free energy of reaction
h) Explain transamination reaction with any one example
i) What are the precursors for salvage pathway of purine nucleotides

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QIII

a. Explain the coordinated regulation of Glycolysis and TCA cycle. (6)
b. Give a detailed account on Glycogen breakdown. (6)

OR

b. Explain the regulation of citric acid cycle. (6)

QIV

a. Explain: "The free energy changes of a reaction is independent of the pathway by which the reaction occurs, it is only that the reaction proceeds from high energy status to the lower energy status". (6)
b. How oxidative phosphorylation is regulated? Explain. (6)

OR

b. Write the reactions for conversion of palmitoyl Co-A to acetyl Co A. (6)

QV

a. Give a detail mechanism of oxidative deamination of Glutamate. (6)
b. Explain the role of glycolytic intermediates for amino acid biosynthesis. (6)

OR

i. What are essential and non essential amino acids. (3)
ii. Name the all amino acid/s and carbohydrate intermediate/s required for heme biosynthesis. (3)

QVI

a. Give the importance of HGPRT in purine and pyrimidine metabolism. (6)
b. Explain the reactions for conversion of ribonuclotides to deoxy ribonuclotides (6)

OR

b. Give an account on purine nuclectide biosynthesis (6)

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