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SARDAR PATEL UNIVERSITY

M. Sc. Biotechnology I Semester Examination (under CBCS)

Saturday, 9th April 2016

Time: 10.30 a.m to 1.30 p.m.

Paper: PS 01EBIT01 (Biochemistry)

Total Marks: 70

Q1. Give the correct answers for the following questions: (08 Marks)

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. In electron transfer, only the quinone portion of ubiquinone undergoes oxidation-reduction, the isoprenoid side chain

   (a) is useless (b) allows UQ to diffuse in the membrane

   (c) also carries electrons (d) none of the above

3. HDL is synthesized from

   (a) Liver (b) intestine (c) Liver & intestine (d) Brain

4. The rate of the FA oxidation can be increased by increasing _____ in the diet.

   (a) PUFA. (b) MUFA. (c) Carnitine (d) Creatinine.

5. Tyrosine can be synthesized from _____.

   (a) Tryptophan (b) Alanine (c) Phenylalanine (d) None of above

6. When pyruvate is not converted into acetyl-CoA?

   (a) All the time (b) When oxygen is plentiful & energy is required

   (c) In anaerobic conditions (d) When glucose is in excess

7. Prediction of secondary structure of proteins by Ramchandran plot is on the basis of rotation around

   (a) Peptide bond (b) Phi & Psi bonds (c) disulphide bonds (d) weak bonds

8. Purines and pyrimidines

   (a) Can be synthesized in humans (b) can not be synthesized in humans

   (c) are required in the diet (d) none of the above

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

1. Which enzyme of glycolysis is halted for the want of NAD^+? How NAD^+ is made available?
2. Differentiate between free energy change and standard free energy change.
3. Glucose and fructose are reducing sugars, but sucrose (containing glucose and fructose) is a non-reducing sugar, why?
4. What are the main circulating lipoproteins in the blood, list them with their sources.
5. What are essential fatty acids? Give examples.
6. Give the sub cellular location of all the reactions of fatty acid biosynthesis.
7. Differentiate between Glucokinase and Hexokinase.
8. What are uncouplers? Give examples.
9. Why 3 D structures of proteins are fragile? Give possible reasons.

Q3. (a) Give examples of homopolysaccharides and heteropolysaccharides and explain the structure and function of any one of them. (06)

(b) Explain the reactions of pyruvate dehydrogenase (PDH) complex. (06)

OR

Q3. (b) Explain the site, reactions and importance of pentose phosphate pathway (PPP). (06)

Q4. (a) Write a detailed note on the carriers involved in electron transport chain. (06)

(b) How do Acetyl-coA produced in mitochondria come to cytosol for fatty acid biosynthesis? (06)

OR

Q4 (b) Explain the coordinated regulation of glycolysis and TCA cycle. (06)

Q5 (a) Explain the oxidation of Palmitoyl-coA and calculate the energy production by β - oxidation. (06)

(b) What are ketone bodies? Under which physiological conditions are they produced? (06)

OR

Q5 (b) Explain the regulation of β- oxidation. (06)

Q6 (a) Give any two examples and explain transamination reactions. (06)

(b) Describe the properties of peptide bond, Phi bond and Psi bonds. (06)

OR

Q6 (b) Write a detailed note on regulation of purine biosynthesis. (06)
