

Seat No.: _____

No. of Printed Pages: 2

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SARDAR PATEL UNIVERSITY**M. Sc. (Genetics) – First Semester Examination (CBCS)****Wednesday, 26th October, 2016****10:00 a.m. to 1:00 p.m.****PS01EGEN01: Essentials of Biochemistry****Total Marks: 70**

Note: (1) Figures to the right indicate marks.

(2) Draw a neat and labeled diagram, wherever necessary.

Q. 1 Choose the most appropriate answer from the four alternatives given: [08]

- i. The permeability of the membrane is modified by the presence of following classes of unique proteins except _____.
- (a) Channels (b) Facilitators (c) Pump (d) ATPase
- ii. What is the fate of excess Glucose-6-Phosphate in the liver cell?
- (a) Pentose Phosphate Pathway (b) Glycolysis (c) Glycogenesis (d) All of these
- iii. Anaplerotic reactions of TCA cycle replenishes _____.
- (a) Energy yielding compound (b) Biosynthetic precursors
(c) Citric acid (d) ATP
- iv. The fatty acid oxidation can be increased by taking _____ more in diet.
- (a) MUFA (b) PUFA (c) Creatinine (d) Carnitine
- v. Which enzyme acts on membrane phospholipid PIP₂ to release DAG and IP₃?
- (a) Phospholipase A (b) Phospholipase C (c) Phosphatase (d) Phytase
- vi. Glutamine synthetase is allosterically inhibited by _____.
- (a) Glycine (b) Tryptophan (c) Both a and b (d) None of the above
- vii. The genetic deficiency of adenosine deaminase leads to _____.
- (a) Immunodeficiency disorders (b) Gout
(c) Lesch - Nyhan syndrome (d) Orotic aciduria
- viii. Match the following and choose correct answer from the codes given below:
- | | |
|-------------|-------------------------------|
| A. Integrin | 1. Immunoglobulin like domain |
| B. Cadherin | 2. Lectin domain |
| C. N- CAM | 3. Adhesive domain |
| D. Selectin | 4. Ligand binding region |
- | | | | | |
|-----|---|---|---|---|
| | A | B | C | D |
| (a) | 1 | 2 | 3 | 4 |
| (b) | 2 | 4 | 1 | 3 |
| (c) | 3 | 2 | 4 | 1 |
| (d) | 4 | 3 | 1 | 2 |

P.T.O

Q.2 Answer any SEVEN from the following: [14]

- i. Define the terms: Cofactors and Prosthetic group.
- ii. Write significance of K_m and V_{max} .
- iii. Define the terms Entropy and Enthalpy.
- iv. Comment: Glycolysis is under tight regulation.
- v. Give any two example of complex sugar.
- vi. Write name of the enzymes involve in lipid transportation.
- vii. Why ketone bodies are synthesized when blood glucose is very low?
- viii. Give examples of aromatic aminoacids.
- ix. Explain the regulation of ribonucleotide reductase.

Q.3(a) Classify the enzymes on the basis of IUB system. Write one example in each group / class. [6]

(b) Classify enzyme inhibition. Explain competitive inhibition in detail. [6]

OR

(b) Enlist factors affecting enzyme action. Describe effect of temperature and pH on enzyme catalyzed reactions. [6]

Q.4(a) Describe the reactions of TCA cycle. [6]

(b) Discuss the importance of HMP shunt pathway. [6]

OR

(b) Justify that gluconeogenesis is not just a reverse of the glycolysis. [6]

Q.5(a) By giving suitable example explain β oxidation of fatty acid. [6]

(b) Discuss the enzymes, reactions and regulation of fatty acid biosynthesis. [6]

OR

(b) Explain alpha and omega oxidation. [6]

Q.6(a) Describe the reactions of urea cycle and write its importance. [6]

(b) Discuss *de novo* synthesis of pyrimidine nucleotides. [6]

OR

(b) Describe transamination reactions. [6]
