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No of Printed Pages: 02

() SARDAR PATEL UNIVERSITY
M. Sc. Integrated Biotechnology – Fourth Semester Examination
Tuesday, 29th March- 2016,
10:30 am – 1:30 pm, PS04CIGB01: Bioenergetics

Note: Figures to the right indicate marks.
Draw a neat labeled diagram, if necessary.

Max Marks:70

Que. No

Marks

Q.1 Attempt all the multiple questions given below:

1 X 08

- Enzymes of Electron transfer chain are located in
a) ER b) Cytoplasm c) Mitochondria d) Chloroplast
- A negative sign for ΔG indicates, that the reaction is
a) Exothermic b) Endothermic c) Fast d) Slow
- Essential product of pentose phosphate pathway is
a) DNA b) RNA c) Ribulose 5-phosphate d) None
- Which of them don't regulate Glycolysis
a) ATP b) NADH c) NADPH₂ d) Pyruvate
- Oxaloacetate formed in TCA cycle can directly get converted to
a) Aspartate b) α KG c) Proline d) Glucose
- The TCA cycle was discovered by
a) Watson b) Crick c) Hans Krebs d) None of them
- Which of them is a nitrogen base
a) Adenine b) Guanine c) ethanolamine c) All of them
- Degradation in nucleic acid mainly happens in
a) Liver b) Brain c) Small intestine d) Gall bladder

Q.2 Answer the questions in brief. (Any 7)

2 X 07

- Explain transformation of energy with a suitable example.
- Write down the role of ATPase in energy generation.
- Explain the reactions; Glucose 6 P₀₄ to Glucose and Fructose 1-6 bi P₀₄ to Fructose 6 P₀₄
- How hexokinase is regulated?
- How many ATPs are produced when glucose converts to pyruvate?

6. What is Amphibolic Nature of the TCA cycle?
7. Explain the reaction catalyzed by Aconitase enzyme in TCA cycle.
8. Explain the degradation of nucleic acid.
9. Draw the structure of a nucleotide and nucleoside in general.

Q.3a. Explain Chemiosmotic theory. 2X6

- b. What is electron transport chain? Describe in detail the mechanism of action.

OR

- b. Describe in detail the biological oxidation-reduction reactions.

Q.4a. Give a detail account on Glycolysis (Pay off phase) 2X6

- b. Describe the oxidative phase of Pentose phosphate pathway.

OR

- b. Describe the non-oxidative phase of Pentose phosphate pathway.

Q.5a. Explain TCA cycle and it's regulation. 2X6

- b. Explain the conversion of pyruvate to acetyl CoA.

OR

- b. Discuss Anaplerotic reaction of TCA cycle.

Q.6a. Draw the structure for Adenine, Guanine, Cytosine, Uracil, GTP and CMP. 2X6

- b. Write a detail note on synthesis of IMF.

OR

- b. Describe the conversion of IMP to AMP and GMP.

②