

(3 hours)

Total Marks: 80

N.B.: All questions are compulsory

Q1

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| a) Enlist the precursors used for pyrimidine biosynthesis. | 1 |
| b) Oxidation of two acetyl CoA molecule via TCA cycle gives ----- ATPs | 1 |
| c) Name any two enzymes involved in Glycogen synthesis | 1 |
| d) Give any one regulatory step of <i>de novo</i> synthesis of purine nucleotide. | 1 |
| e) Name the inhibitor of COX. | 1 |
| f) Name the drug which modulates uric acid synthesis. | 1 |
| g) Give the reaction catalysed by HMG CoA reductase | 2 |
| h) Name the enzyme, substrate and product formed in the rate-limiting step of fatty acid biosynthesis. | 2 |
| i) Give the significance of Pentose phosphate pathway | 2 |
| j) Define proton motive force | 2 |
| k) Give the name of enzyme and its deficiency disorder involved in purine salvage pathway. | 2 |
| l) Calculate the total ATPs obtained in β - oxidation of 18:1 (Δ^9) | 2 |
| m) Name one inhibitor drug and the enzyme it inhibits in Glycolysis. | 2 |

Q2 (a) Give the names and structures of substrate and product, coenzyme for the following enzyme catalysed reaction (**Any four**) 8

- i) β -ketoacyl ACP reductase
- ii) Lactonase
- iii) Citrate synthase
- iv) Prostacycline synthase
- v) HMG CoA synthase

(b) Give the name of the enzyme catalysing the following conversion 4

- i) trans- Δ^2 - Enoyl CoA to L- β - hydroxyl acyl CoA
- ii) Aspartate to N-carbamoylaspartate
- iii) Malate to oxaloacetate
- iv) Glucose -6-phosphate to 6- phosphoglucono- δ -lactone

Q3 (a) Write the three irreversible reaction of glycolysis. 3

(b) Give the reaction catalysed by transketolase. 3

(c) Explain the carnitine shuttle involved in oxidation of fatty acids. 2

(d) Give the two strategies for synthesis of phospholipids. 2

(e) Outline the steps involved in synthesis of AMP from IMP. 2

- Q4. (a) Explain the components of ETC 3
 (b) Write the activation and transport shuttle for fatty acid biosynthesis. 3
 (c) Discuss the importance of ketone bodies. 2
 (d) Give names of two enzymes with the reactions which are only present in glyoxylate cycle and not in TCA cycle. 2
 (e) Explain salvage pathway with example of any one reaction involved in it. 2
- Q5 (a) Give the reactions involved in conversion of isocitrate to succinate. 3
 (b) Explain the β -oxidation of odd number carbon containing fatty acids. 3
 (c) Discuss substrate-level phosphorylation. 2
 (d) Outline the steps involved in conversion of acetyl CoA to mevalonate. 2
 (e) What is the source of the precursor for PRPP? Give the reaction involved in synthesis of PRPP. 2
- Q6 (a) Outline the steps involved in synthesis of acetoacetate. 3
 (b) Give the enzymes involved in glycogen breakdown with their roles. 3
 (c) Describe the Cori cycle. 2
 (d) Give the synthesis of CTP from UMP. 2
 (e) Mention drugs modulating cholesterol synthesis. 2