(3 hours) **Total Marks: 80**

N.B.: **All** questions are compulsory

Q1

a) Oxidation of one acetyl CoA molecule via TCA cycle gives ---------- ATPs 1
b) Enlist the precursors used for pyrimidine biosynthesis 1
c) Name the inhibitors of Cyclo oxygenase enzyme 1
d) Give name of any one enzyme involved in regulation of *de novo* synthesis of purine nucleotide 1
e) Define "Glycolysis" 1
f) Give 2 examples of chemical uncouplers of oxidative phosphorylation 1
g) Give the regulatory reaction for cholesterol biosynthesis 2
h) Give complete reaction for rate – limiting step of fatty acid biosynthesis with structures. 2
i) Give the significance of HMP pathway 2
j) Calculate the total ATPs obtained in β- oxidation of oleic acid 2
k) Define salvage pathway and what is the disorder associated with salvage pathway 2
l) Define proton motive force 2
m) Enlist the enzymes involved in Glycogenesis 2

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

i) Enoyl ACP hydratase
ii) Glucose-6-phosphate dehydrogenase
iii) Phosphofructo kinase - I
iv) Prostacycline synthase
v) Orotidylic acid decarboxylase

(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) Pyruvate to oxaloacetate.
iv) Glucose -6-phosphate to 6- phosphoglucono-δ-lactone

Q3 (a) Write reactions for conversion of succinate to oxaloacetate in Kreb cycle along with structures, enzymes, coenzymes. Also indicate whether reaction is reversible or irreversible. 3
(b) Give the reaction catalysed by transketolase. 3
(c) Differentiate between β- oxidation of saturated and unsaturated even number fatty acids. 2
(d) Enlist enzymes involved in biosynthesis of triglycerides 2
(e) Outline the steps involved in synthesis of AMP from IMP. 2

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Q4. (a)Explain the complexes of ETC 3

(b) Give series of reactions for conversion of Acetyl-CoA to 3-ketoacyl ACP in the biosynthesis of fatty acids 3

(c) Give significance 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) Give reaction catalysed by thymidylate synthase enzyme. 2

Q5 (a) Give the reactions involved in pay off phase of glycolysis. 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) 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

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