- **All questions are compulsory.**
- **Figures to Right indicate marks.**
- **Draw diagram wherever necessary.**

Q.I (A) Define the following terms. (any two) (04)

1. Apoenzyme
2. Cofactors
3. Zymogen
4. Substrate

Q.I (B) State True or False and correct if the statement are False. (Any two) (04)

1. Emil Fischer hypothesized Lock and Key model.
2. Amylase breaks down starch.
3. Enzymes can bind to any substrate.
4. Enzymes are carbohydrate in nature.

Q.I (C) Answer the following (any two) (12)

1. Explain Mixed inhibition with example.
2. Explain with graph, What is the effect of Substrate concentration on enzyme activity?
3. Derivation of Michaelis-Menten Equation based on steady state assumption.
4. Elaborate of mechanisms of enzyme catalysis.

Q.I (A) Define the following terms. (any two) (04)

1. Hydrolysis
2. Deamination
3. Dehydrogenation
4. Hydration

Q.II) B) Give the significance of the following enzymes with suitable reaction (any two) (04)

1. Hexokinase
2. Isocitrate dehydrogenase
3. Carnitine acyl transferase-I
4. Pyruvate Dehydrogenase

Q. II (C) Answer the following (any two) (12)

1. Give an account of ATP formed in aerobic respiration.
2. Explain HMP pathway.
3. Give a detailed account of β-oxidation.
4. Explain significance of ALT and AST.

P.T.O.

Q III) A) Give significance of the following in Electron transport chain (any two) (04)

1. Chlorophyll
2. C_{10} subunit of ATP synthase
3. Oxidative phosphorylation
4. Ubiquinone

Q.III) B) State whether the following statements are true or false. (any four) (04)

1. Succinate dehydrgenase is the only enzyme common for ETC and Kreb cycle.
2. NADH dehydrogenase is a III protein complex of oxidative phosphorylation.
3. Cynide is an inhibitor of oxidative phosphorylation.
4. The site of photophosphorylation is chloroplast outer membrane.
5. The ATP synthesis takes place due to proton motive force.
6. Ubiquinol is the sole mobile electron carrier from complex I and II towards complex III.
7. In Photophosphorylation, PS-I absorption maxima is at 680 nm.
8. The first electron acceptor of oxidative phosphorylation is O^{-1} radical.

Q.III) C) Explain (any two) of the following. (12)

1. Oxidative phosphorylation with schematic representation.
2. ATP synthesis across the thylakoid membrane during photophosphorylation.
3. Role of photophosphorylation in plant metabolism.
4. The mode of action of inhibitors which block the ATP synthase and ATP/ADP translocase

Q.IV Write a note on (any Three) of the following (15)

1. Cellulases and its industrial application.
2. Different sources of enzymes.
3. ω-oxidation.
4. Preparatory phase of glycolysis.
5. Various entry points of mitochondrial ETC
6. Electron carriers of noncyclic photophosphorylation.

—— The End ——