

PGIIS - N 1092 - A A-16
M.Sc. IIth Semester (CBCS) Degree Examination
Biochemistry
(Metabolism - I)
Paper : HCT 2.2
(New)

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:Answer question **No. 1** and any **Four** of the remaining

- 1. Answer the following. (10×2=20)**
- a) What is Cori cycle? Give its significance.
 - b) How do electrons from cytosolic NADH/FADH₂ transferred to mitochondria.
 - c) What are Uncouplers and Inhibitors? Give examples.
 - d) What are anaplerotic reactions? Give an example
 - e) Differentiate between cyclic and non-cyclic photophosphorylation.
 - f) What are high energy compounds? Write the structure of ATP.
 - g) Give the reaction catalyzed by triose phosphate isomerase.
 - h) Give the reactions for the conversion of galactose to glucose-1-phosphate.
 - i) Define photolysis of water and photorespiration.
 - j) What is Hill reaction?
- 2. a) Discuss the reactions and significance of glyoxylate cycle.**
- b) Discuss the factors responsible for making ATP a high energy compound. (8+7=15)**
- 3. a) Discuss the events of non-cyclic photophosphorylation process of photosynthesis**
- b) Justify gluconeogenesis is not the reversal of glycolysis.**
- c) Describe the organization and properties of the components of respiratory chain.**
- (5+5+15)**

4. a) Outline the reactions of glycogen biosynthesis in liver. Give its regulation.
b) Discuss the anaerobic fates of pyruvate. (8+7=15)
5. a) Discuss the mechanism of oxidative phosphorylation
b) Discuss the biosynthesis of peptidoglycan. (8+7=15)
6. a) Outline the reactions of TCA cycle. Comment on the energetics of TCA cycle.
b) Give an account on electron transport in photosynthetic bacteria. (8+7=15)
7. Write a note on **any three** of the following (3×5=15)
- a) Biosynthesis of lactose
 - b) Hormonal regulation of glycogenolysis.
 - c) Oxidative reactions of the pentose phosphate pathway
 - d) Glycogen storage diseases
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PGIIS-O 1091 A-16
M.Sc II Semester (CBCS) Degree Examination
Biochemistry
(Metabolism-II)
Paper : HCT-2.2
(Old)

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:Answer question **No.I** and any **four** of the remaining

1. Answer the followings. (10 × 2 = 20)
- a) What is omega oxidation?
 - b) How is ammonia assimilated?
 - c) Mention the role of carnitine in fatty acid metabolism.
 - d) What is transdeamination? Give example.
 - e) Give reaction for interconversion of Ser to Gly.
 - f) What are ketogenic amino acids? Give example.
 - g) Give structure of purine and indicate biosynthetic origins of various atoms present in it.
 - h) Mention genetic defect and symptoms of Maple Syrup urine disease.
 - i) How does azaserine inhibit purine biosynthesis?
 - j) Name the degradation products of heme in the body.
2. a) Discuss β -oxidation of palmitic acid. (7+8 = 15)
- b) Discuss biosynthesis and regulation of cholesterol.
3. a) Describe nitrogenase complex. (7+8 = 15)
- b) Give an account on the role of glutathione.

4. a) Discuss reaction of urea cycle. Explain its regulations.
b) Explain role of PLP in amino acid metabolism. (7+8 = 15)
5. a) What are polyamines? Explain formation of spermine.
b) What is salvage pathway? Discuss. (7+8 = 15)
6. a) Give an account on degradation of purine nucleotides.
b) Discuss biosynthesis of coenzymes NAD and NADP. (7+8 = 15)
7. Write notes on any three of the following. (3 × 5 = 15)
- a) PKU
 - b) Lesch-Nyhan syndrome
 - c) Biosynthesis of heme
 - d) One carbon compounds.
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PGIIS-N 1091-A A-16
M.Sc II Semester (CBCS) Degree Examination
Biochemistry
(Enzymology)
Paper : HCT-2.1
(New)

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:Answer question **No.I** and any **four** of the remaining:

1. Answer the following : (10 × 2 = 20)
- a) Distinguish between specificity and specific activity of an enzyme.
 - b) How are coupled enzymes assayed? Give an example.
 - c) Define ketal and turnover number of an enzyme.
 - d) What is the effect pH on the enzyme activity?
 - e) Explain briefly acid base catalysis of an enzyme with an example.
 - f) Give cozymic action of biotin.
 - g) How are K_m and V_{max} evaluated by using L-B plot?
 - h) How zymogen activation takes place?
 - i) Distinguish between multifunctional and multienzyme complexes.
 - j) What is Khoshland's induced fit hypothesis?
2. a) Outline the steps involved in the purification and characterization of an enzyme with suitable example.
- b) Explain any two methods used for the assay of purified enzyme. (9+6 = 15)
3. a) What is meant by pre-steady state kinetics? Derive Michaelis-Menten equation for a single substrate enzyme catalyzed reaction under steady state assumption.
- b) What are primary and secondary plots? How are they determined? Explain their significance with respect to bisubstrate reactions. (8+7 = 15)

4. a) Explain the mechanism of covalent catalysis of an enzyme with an example.
b) How do you identify the active site of an enzyme? Explain with any two methods
c) Discuss the mechanism of action of RNase. **(5+5+5 = 15)**
5. a) Describe the composition and subunit functions of PDH complex.
b) What are isoenzymes? Discuss the properties and physiological significance of LDH. **(8+7 = 15)**
6. a) Discuss the regulation of enzyme activity by reversible and irreversible covalent modification with one suitable example for each class.
b) Describe the clinical applications of enzymes. **(9+6 = 15)**
7. Write short notes on any three of the following : **(3 × 5 = 15)**
a) Coenzymic functions of PLP.
b) ATCase
c) MWC and KNF model
d) Rapid reaction techniques.
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