

- (b) Write down the steps involved in the synthesis of different polyamines.
- (c) Write down the reactions involved in :
- (i) Glycine-serine interconversion.
 - (ii) Chorismate to phenylalanine. **6,6,4**

Roll No.

Total Pages : 04

LMDE/D-23

6034

BIOENERGETICS AND METABOLISM

BCH-104

(w.e.f. 2023-24-LOCF)

Time : Three Hours]

[Maximum Marks : 80

Note : Attempt *Five* questions in all, selecting *one* question from each Section. Q. No. **1** is compulsory. All questions carry equal marks.

- 1.** (i) Write major differences between glycolysis and pentose phosphate pathway.
- (ii) How does oxidative phosphorylation differ from substrate level phosphorylation ?
- (iii) What is the function of hypoxanthine guanine phosphoribosyl transferase ?
- (iv) How methotrexate inhibit cancer cell production ?
- (v) Write the human diseases resulting from abnormal accumulation of membrane lipids.
- (vi) Name the various types of phospholipids. How do they differ from glycolipids ?

- (vii) Differentiates between glucogenic and ketogenic amino acids with examples.
- (viii) Describe the importance of glutathione in living system. **8×2=16**

Section A

- 2. (a) Why is ATP called a high energy compound ? Discuss the chemical basis of large free energy change associated with hydrolysis of ATP.
- (b) Giving various steps of glycolytic pathway; discuss energy yield in the conversion of glucose to pyruvate.
- (c) Write the reaction for conversion of pyruvate to lactate. **5,9,2**
- 3. (a) Discuss various reactions involved in glycogen catabolism. Is glycogen catabolism a complete reversal of its synthesis reaction ?
- (b) How does urea enters into TCA cycle ?
- (c) Discuss the glyoxylate pathway in detail. **6,5,5**

Section B

- 4. (a) How are pyrimidines synthesized in living cells ?
- (b) Discuss the regulation of purine nucleotide biosynthesis.
- (c) Write a note on synthesis of deoxy-ribonucleotide. **7,6,3**

- 5. (a) Discuss the degradation of purine nucleotides. How is the synthesis of uric acid inhibited by allopurinol ?
- (b) Describe the biosynthesis of coenzyme A. **10,6**

Section C

- 6. (a) Discuss the oxidation of fatty acids by the process of β -oxidation.
- (b) What is α -oxidation ? Discuss its importance.
- (c) How does peroxisomal β -oxidation differ from mitochondrial β -oxidation ? **7,4,5**
- 7. (a) Discuss the role of elongases and desaturases in fatty acid synthesis.
- (b) Write down the important functions of eicosanoids.
- (c) How are ketone bodies formed ? **7,5,4**

Section D

- 8. (a) Name different families of amino acid degradation. Give the degradative pathway for any amino acid that falls in succinyl CoA family.
- (b) Explain the reactions of urea cycle and its significance. **10,6**
- 9. (a) How is cysteine synthesized in the body ?