

9. (a) Explain, how preferential binding of the transition state complex enhances enzyme activity.
- (b) Discuss the principles and applications of enzyme-linked immunosorbent assay in immunochemical analysis. **8,8**

Roll No. ....

Total Pages : 04

**LMDE/M-24**

**7050**

ADVANCED NUTRITIONAL

BIOCHEMISTRY–II

FND-202

(w.e.f. 2020-21)

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *Five* questions in all. Q. No. **1** is compulsory. Remaining *four* questions will be attempted by selecting *one* question from each Unit. All questions carry equal marks.

1. (i) What is the substrate of Glycogenesis ?
- (ii) What are phase I reactions in the metabolism of xenobiotics ?
- (iii) What is non-oxidative deamination reaction of amino acids ?
- (iv) Define the following terms :
- (i) Cofactors
- (ii) Isoenzyme.
- (v) What are thromboxanes ? Discuss their role in inflammation.
- (vi) What is the role of proton pumping in oxidative phosphorylation ?

- (vii) What is nutritional regulation of gene expression ?
- (viii) Elaborate the following abbreviation: RIA, GLC.

**8×2=16**

### **Unit I**

2. (a) Discuss the anaplerotic reactions and their importance in replenishing TCA cycle intermediates. Explain, how these reactions maintain metabolic balance and support biosynthesis.
- (b) Discuss the role of the urea cycle in eliminating ammonia and maintaining nitrogen balance in the body. **8,8**
3. (a) Discuss the role of amino acids as biosynthetic precursors in the synthesis of heme and glutathione.
- (b) How does glucose metabolism of cell get channelized to fulfill its increased demand of Ribose-5-P ? **8,8**

### **Unit II**

4. (a) Write a detailed note on fatty acid synthase.
- (b) Write two-ways by which cytoplasmic NADH + H<sup>+</sup> contributes the energy to cell via ETC under aerobic condition. **8,8**
5. (a) Explain the formation of ketone bodies and their utilization in the body. Discuss the conditions under which ketone bodies are produced and their significance as an alternative fuel source.

- (b) Define Uncoupler and Ionophore. Explain in detail by taking example, how uncoupler impact ATP synthesis. **8,8**

### **Unit III**

6. (a) Define recombinant DNA technology and genetically modified foods. Explain the techniques used in creating recombinant DNA molecules and its application associated with Genetically Modified Organisms (GMOs) by taking atleast one suitable example.
- (b) Discuss the biosynthesis of UMP. **8,8**
7. (a) Describe in detail the process of transcription in prokaryotes.
- (b) Discuss the consequences of impaired xenobiotic metabolism in the body. **8,8**

### **Unit IV**

8. (a) Compare and contrast paper chromatography and ion exchange chromatography, highlighting their differences in terms of technique, stationary phase, and applications.
- (b) Explain the concept of feedback and product inhibition in enzyme regulation and provide examples. **8,8**