

**MASTER OF SCIENCE (DIETETICS AND  
FOOD SERVICE MANAGEMENT)**

**Term-End Examination**

**June, 2007**

**MFN-002 : NUTRITIONAL BIOCHEMISTRY**

Time :  $2\frac{1}{2}$  hours

Maximum Marks : 75

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**Note :** Answer **four** questions in all. Question no. 1 is **compulsory**.

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1. (a) Explain the following terms in 2 – 3 sentences each : 10
- (i) Epimerism
  - (ii) Salvage Pathways
  - (iii) Michaelis-Menton constant
  - (iv) Isozymes
  - (v) Ketosis
- (b) Write the structure of the following compounds : 5
- (i) Lactose
  - (ii) Niacinamide
  - (iii) Cholesterol

- (iv) Citrate
- (v) Lysine
2. (a) Give the steps involved in the biosynthesis of a molecule of palmitic acid. 15
- (b) Briefly describe the different types of hyperlipoproteinemias. 5
3. (a) What are the chemical properties of fats ? 8
- (b) Describe in detail the functions of Vitamin A. 12
4. Comment briefly on the following statements : 5+5+5+5
- (i) Prenatal diagnosis, wherever possible, is very important in hereditary diseases.
- (ii) Glycolysis and gluconeogenesis are regulated reciprocally.
- (iii) Enzymes are highly specific.
- (iv) Vitamin B<sub>12</sub> deficiency leads to folate trap.
5. (a) 'Citric acid cycle (TCA) is a central pathway for carbohydrate, protein and lipid metabolism.' Justify the statement giving the reactions involved. 8
- (b) What are the disadvantages of the following : 12
- (i) Anaerobic glycolysis

- (ii) Absence of glucose-6-phosphatase
  - (iii) Generation of free radicals in the body
  - (iv) High levels of LDL
6. (a) Discuss the advantages of the following : 12
- (i) Cori cycle
  - (ii) Anaplerotic reactions in carbohydrate metabolism
  - (iii) Glutathione peroxidase in RBC
  - (iv) Cytochrome oxidase
- (b) Describe the biochemical role of insulin. 8
7. Write short notes on any **four** of the following : 4×5=20
- (i) Nutritional management of PKU and MSUD
  - (ii) Biochemical role of niacin
  - (iii) Mechanism of action of Group I hormones
  - (iv) Functions of iron
  - (v) Urea cycle