

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

**Term-End Examination**

**December, 2006**

**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 in 2 – 3 lines each : 10
- (i) Apoenzyme
  - (ii) Zwitter ions
  - (iii) Epimerism
  - (iv) Signal transduction
  - (v) Oxidative deamination
- (b) Match the items in Column A with the items in Column B. 5

<u>Column A</u>	<u>Column B</u>
(i) Ergocalciferol, Cholecalciferol	(a) Disorders of lipid metabolism
(ii) Retinol, Retinal, Retinoic acid	(b) Active forms of vitamin D
(iii) Tocopherols, Tocotrienols	(c) Active form of niacin
(iv) Phenylketonuria, Tyrosinemias, Alcaptonuria	(d) Disorders of carbohydrate metabolism
(v) Gaucher disease, Tay-Sachs disease	(e) Active forms of vitamin A
	(f) Disorders of protein metabolism
	(g) Vitamin E is the generic name of these compounds

2. (a) What does the study of nutritional biochemistry entail? Explain. 6

(b) What is a glycoside linkage? Indicate the glycosidic linkage in the following compounds, graphically: 6

- Amylopectin
- Cellulose

- (c) Structurally and functionally differentiate between DNA and RNA. 8
3. Describe briefly how the following processes take place in the body : 5+5+5+5
- (i) Metabolism of very low density lipoprotein (VLDL)
  - (ii) Glucose from fructose
  - (iii) Alanine cycle
  - (iv) Synthesis of phospholipids
4. (a) What is  $\beta$ -oxidation ? Where does this reaction take place in the body ? 2
- (b) Describe the reactions involved in  $\beta$ -oxidation including energy considerations. 8
- (c) Define the term hyperlipoproteinemia. Present a brief review on the types of hyperlipoproteinemias. 10
5. (a) Give the sequence of reactions and the energetics of glycolysis. 12
- (b) What is meant by hexose monophosphate pathway ? How does it differ from glycolysis ? 8
6. (a) What is meant by "De Novo Synthesis" ? Explain the process in the context of purine synthesis. 12
- (b) What are the clinical symptoms encountered in PKU and MSUD ? 4
- (c) Discuss the nutritional management of PKU and MSUD. 4

7. Write short notes on any **four** of the following : 5+5+5+5
- (i) Factors affecting enzyme activity
  - (ii) Digestion and absorption of lipids in the body
  - (iii) Electron transport chain
  - (iv) General sequence of events in hormonal cascade system
  - (v) Biological role of vitamin D