MASTER OF SCIENCE (DIETETICS AND FOOD SERVICE MANAGEMENT)

Term-End Examination

June, 2006

MFN-002 : NUTRITIONAL BIOCHEMISTRY

Time : $2\frac{1}{2}$ hours *Maximum Marks : 75*

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

1. (a) Fill in the blanks : 5

(i) Carbohydrates are basically polyhydroxy _____ or ketones or their derivatives.

(ii) Simple lipids are esters of _____ with various alcohols.

(iii) Molecules which have the characteristics of an acid and a base and are capable of reacting chemically either as an acid or a base are called _____ molecules.

(iv) Vitamin _____ functions as a coenzyme for the transfer of NH_2 group from amino acids.

(v) The biochemical role of ascorbic acid is related to it being a good _____ agent.

(b) Explain the following in 2 – 3 sentences only : 10

(i) Holoenzyme

(ii) Nucleotide

(iii) Inulin

(iv) Chylomicron

(v) Gluconeogenesis

2. (a) What is meant by the term isomerism ? Explain the term in the context of the structural isomers of carbohydrates. 2+8

(b) Give the general structural formula of an amino acid. Classify the amino acids according to the nature of the side chain, giving examples. 2+3

(c) Describe the primary and secondary structures of proteins. 5

3. Justify the following statements giving examples : 5+5+5+5

(i) Isoenzymes are often estimated to specify a disease organ/tissue.

(ii) Insulin influences the intracellular utilization of glucose.

(iii) Low protein diet is recommended in arginemia.

(iv) Calcitriol affects calcium homeostasis.

4. (a) Enumerate the various steps of cholesterol synthesis and discuss how it is regulated in the body. *12*

(b) What is lipogenesis ? List the reactions involved in this process. *8*

5. (a) What is the significance of citric acid cycle ? Enumerate the reactions of this cycle. *15*

(b) Enumerate the components of electron transport chain. *5*

6. (a) What is the major end product of protein metabolism ? Elaborate on the steps involved in the urea cycle. *12*

(b) Differentiate between ketogenic and glucogenic amino acids giving examples. *8*

7. Write short notes on any ***four*** of the following : *5+5+5+5*

(i) Mechanism of enzyme action

(ii) Inborn disorders of lipid metabolism

(iii) Role of pancreas in digestion

(iv) Biological role of vitamin A

(v) Classification of hormones according to their mechanism of action