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MFN-002

01252

MASTER OF SCIENCE (DIETETICS AND FOOD SERVICE MANAGEMENT)

Term-End Examination

December, 2011

MFN-002 : NUTRITIONAL BIOCHEMISTRY

Time : 2½ hours *Maximum Marks : 75*

Note : *Answer **four** questions in all. Questions No. 1 is **compulsory**.*

1. (a) Give one example for each of the following : 7

(i) Aldose-ketose isomerism

(ii) Epimers

(iii) Properties of Monosaccharides

(iv) Unsaturated fatty acids

(v) Chemical Properties of Fats

(vi) Amino acids found in proteins

(vii) Conjugated proteins

(b) Explain the following in 2-3 sentences only. 8
Give the structure wherever possible.

(i) Nucleotide

(ii) Phospholipids

(iii) Anaplerotic Reaction

(iv) VLDL

2. (a) What is enzyme inhibition ? Explain its significance. 8

(b) Briefly explain the digestion and absorption of carbohydrates in our body. 8

(c) Give the structure and the two isomers of amino-acids. 4

3. Explain the following briefly : 5+5+5+5

(a) Oxidation of pyruvate to Acetyl CoA

(b) Gluconeogenesis - Substrate and Functions

(c) Metabolic significance of HMP pathway.

(d) Oxidative phosphorylation.

4. (a) Briefly discuss the role of carnitine in the transfer of fatty acids. 5

(b) Explain the energy production in the β-oxidation of fatty acids, giving the entire sequence of reactions involved. 15

5. (a) Explain the transamination and the deamination reactions involved in the degradation of amino acids in our body. Highlight the enzymes involved in these reactions. 10

(b) Describe the de-novo pathway for the purine nucleotide synthesis. 10

6. (a) What is a free radical ? Explain the role of free radical in lipid peroxidation . **2+8**

(b) What is an anti-oxidant ? Explain the anti-oxidant defence systems (enzymatic and non-enzymatic) involved in the disposal of free radicals. **2+8**

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

(a) Role of Thiamine diphosphate as a Co-Enzyme in Metabolism

(b) Biochemical Role of Hormones

(c) Inborn Euroes of lipid Metabolism

(d) Five steps involved in cholestrol Biosynthesis

(e) Reactions leading to the generation of ATP in the citric acid cycle.