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MFN-002

MASTER OF SCIENCE (DIETETICS AND FOOD SERVICE MANAGEMENT)

M. Sc. (DFSM)

Term-End Examination

June, 2021

MFN-002 : NUTRITIONAL BIOCHEMISTRY

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

Note : *(i) Question **No. 1** is compulsory.*

*(ii) Attempt **five** questions in all.*

(iii) All questions carry equal marks.

1. (a) Give the meaning and importance of nutritional biochemistry. 3

   (b) Graphically represent aldose-ketose isomerism. 2

   (c) Give the classification of lipids based on the chemical structure. 2

   (d) Present general structural formula of amino acid and protein. 3

   (e) Name *four* forms in which thiamine occurs. Which is the most active form ? 2

   (f) Differentiate between enzyme, coenzyme and cofactor. 3

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

   (a) Structure and significance of n-3 and n-6 fatty acids.

   (b) Structure and role of nucleotide in our body.

   (c) Enzymes involved with the digestion of proteins in our body and their action.

3. (a) Briefly explain the mechanism of enzyme action in our body. 5

   (b) How are lipids transported in blood ? Enumerate. 5

(c) Give the role of Vitamin D and parathormone in calcium homeostasis. 5

4. (a) How many ATP's are produced in the reaction of glycolsis ? Give the *three* irreversible reactions only of the glycolytic pathway. 1+4

(b) Give the reactions involved in the Beta-oxidation of fatty acids. 10

5. (a) What is urea cycle ? Enlist the steps and the enzymes involved in urea cycle. 8

(b) What are hormones ? Differentiate between Group I and Group II hormones giving examples. 2+5

6. (a) Give the role of free radicals and antioxidants in lipid peroxidation. 5

(b) Present the metabolic pathway in Maple Syrup Urine Disease (MSUD). 5

(c) Explain briefly the synthesis and degradation of pyrimidine nucleotide (giving the reactions). 5

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

(a) Steps involved in cholesterol biosynthesis

(b) Significance of citric acid cycle

(c) Components of electron transport chain

(d) Ketogenic and glucogenic amino acids

(e) Defective enzyme and beneficial therapy in phenylketonuria