Ex./FCB/T/212/B/66/2013

B.E. (F.T.B.E.) Examination, 2013

(2nd year, 1st Semester)

BIOCHEMISTRY AND NUTRITION - II

Full Marks : 100 Time : Three Hours

Use a separate Answerscript for each Part.

Part - I

Answer question **No. 1** and *any two* from the rest.

1. (a) Name the carotenoids that show pro-vitamin A activity. Provide an overview of vitamin A degradation. 3+5

   (b) What is RDA ? State the RDA for any two vitamins of your choice. 2+2

   (c) What are the causes of mineral loss in foods ? 3

   (d) Design a geriatric diet at moderate cost. Name two leading companies that manufacture geriatric food. 3+2

2. (a) What is sunlight off-flavor ? How can this off-flavor generation be averted ? 2+1

   (b) What is NPU ? What are the NPU values of an Indian diet ? How is protein requirement as a dietary protein calculated ? 2+1+2

[*Turn over*]

(c) Write the reactions showing sequential one-electron transfer in L-ascorbic acid ? Indicate the forms that show vitamin C activity. 5+2

3. (a) In which form is thiamine present in the human body ? What factors influence stability of thiamine ? 1+4

(b) Diagrammatically show how essential minerals can be grouped by chemical form, bioavailability, occurrence and nutritional deficiency. 5

(c) Which is the major naturally occurring form of folate in foods ? What form of Fe is most preferred in food fortification and why ? 1+4

4. (a) What are micronutrients ? Mention dietary sources of two micronutrients of your choice. 2+3

(b) What are the roles of Fe in the human body ? How does the body protect itself from the toxic effects of Fe ? 3+4

(c) Which is the most abundant mineral in the human system ? What does FAO/WHO recommended for its intake ? 1+2

Part - II

Answer question **No. 5** and *any two* from the rest.

1. Derive Michaelis-Menten equation. Add a note on the significance of K_M value. In a Michaelis-Menten enzyme

[*Turn over*]

mechanism, what concentrations (related to K_M) are needed for the reaction rate to be (a) 0.1 V_{max} (b) 0.9V_{max}?
8+3+2+2=15

2. List six classes of enzymes and mention only one distinctive feature for each. 9+6=15

3. Define basal metabolic rate. State the factors that influence basal metabolic rate. Name the essential amino acids and state why they are so called ? 4+6+5=15

4. Describe different types of enzyme inhibitors. Give an example of enzyme inhibitor use as drug. 12+3=15

5. Write short note on (*any four*) : 5×4=20

   (a) Active site

   (b) Turnover number

   (c) Isozyme

   (d) Biological value of food

   (e) Feedback inhibition

   (f) Glycemic index

   (g) Coenzyme.

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