

B.E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING

SECOND YEAR FIRST SEMESTER – 2018

Subject: BIOCHEMISTRY & NUTRITION- II

Time: Three hours

Full Marks: 100

Use separate Answer scripts for **Part – I & Part – II**

Part – I (Marks - 40)

1. Answer any five questions: (2×5=10)

- a. Give the definition of nutrition.
- b. What do you mean by adjusted body weight?
- c. What is antinutrient?
- d. Draw the food pyramid.
- e. What is nutrient turnover?
- f. Write the name of antioxidant compounds in coffee beans and rice bran oil.
- g. Why carbohydrate is essential for complete β -oxidation of fat?
- h. Write the full form of RDA and BMR.

2. Write short note on any four of the following: (5×4=20)

- a. Glycemic index
- b. Protein-energy malnutrition
- c. Positive Health
- d. Dietary functions of fat
- e. Adult consumption unit
- f. Complications related to over nutrition

3. Calculate the carbohydrate, protein and fat requirements of the following subject: Age- 25 years, Gender- male, Height- 5' 7", Weight- 70 kg, Type of activity- Moderate. (10)

Or

4. (a) What are the characteristics of a "Reference man"? (b) Calculate the glycemic load of an apple based on following information: Glycemic index value = 38, Carbohydrate per serve = 15g. (c) What are the differences between enrichment and fortification? (d) What do you mean by nutraceutical? (3+2+3+2=10)

[Turn over

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Part II

Full Marks : 60

Use Separate Answer scripts for each Group

Answer any six questions:

- 1a. Classify enzymes.
b. Write about the chemistry of thiamine. Give structure.
c. What are the functions of magnesium? (3+4+3)
- 2a. How does the presence of competitive inhibitor affects K_m and V_{max} ?
b. Describe the role of vitamin A in vision.
c. What are the functions of calcium? (4+3+3)
- 3a. What are isozymes? Give example.
b. What are the functions of sodium?
c. Describe the role of pyridoxine in glycogen metabolism. (3+4+3)
- 4a. What is induced fit model?
b. An enzyme with a K_m value of 5mM has a reaction rate of 200mmol/min at a substrate concentration of 0.5 mmol. What is the maximal reaction rate that this enzyme can achieve?
c. What is the chemical basis of enzyme specificity? (3+4+3)
- 5a. Give the structure of vitamin C.
b. What are the functions of vitamin C?
c. What are the deficiency symptoms of vitamin C? (2+4+4)
- 6a. What are the functions of iron?
b. What is hemosiderosis?
c. What is hemochromatosis?
d. Describe the role of copper in iron metabolism. (3+2+2+3)
- 7a. Write the names of FAD dependent enzymes that are involved in carbohydrate metabolism.
b. What is turnover number?
c. Any enzyme with lower K_m is more easily saturated than the enzyme with higher K_m . Explain. (3+3+4)