Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – SUMMER • 2014

Subject Code: 141401 Date: 12-06-2014

Subject Name: Food Nutrition and Biochemistry

Time: 10:30 am - 01:00 pm Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Draw a schematic representation of nutrient wheel. Discuss the importance of each nutrient. 7

(b) Do as directed. 7

i) Enlist the factors affecting human nutrition
ii) Define omega-3 fatty acid
iii) State the precursor of Vitamin D
iv) Name the active potent form of lactoflavin in human body
v) Introduce briefly Scurvy in human being
vi) State the importance of gastric juice in food digestion.
vii) What do you understand by Basal metabolism rate?

Q.2 **(a)** An enzymatic assay was carried under two different sets of conditions. The results are tabulated as below. Plot a lineweaver-Burke plot and calculate Vm and Km for both conditions. Also comment on the kind of inhibition displayed. 7

S (μMol)	Vo-A	Vo-B
0.100	2.246	5.130
0.033	1.667	3.700
0.020	1.342	2.941
0.010	0.901	1.890
0.005	0.540	1.110

(b) Define digestion and absorption. Discuss the digestion of fat in human body. 7

OR

(b) Discuss the effect of heating on carbohydrate. 7

Q.3 **(a)** Describe the classification of food on the basis of physiological functions in human. 7

(b) What is balanced diet? Highlight on the nutritional requirement of an infant and adult. 7

OR

Q.3 **(a)** Discuss the classification of minerals. State its important functions in human nutrition. 7

(b) Discuss the properties, functions and requirement of vitamin C. 7

Q.4 **(a)** Differentiate between the followings 4

i) Complete protein and Incomplete protein
ii) Wet beri beri and dry beri beri

(b) Enlist the role and application of enzymes in food processing in a tabular form. 3

(c) Discuss the functions and excessive consumption consequences of 7

carbohydrate.

OR

Q.4 **(a)** Introduce the followings briefly. 4

i) Fortification

ii) RDA

(b) Write a short note on oxidation of fatty acids. 3

(c) Calculate the calorific value of breakfast comprising of 2 fried potato paratha (150 g each), and 150 g milk. Each paratha was prepared from the wheat flour and potato in the ratio of 2:1 and fried each paratha in 10 g butter. 7

Composition of food products

Product	% Carbohydrate	% Protein	% Fat
Wheat flour	65	12	1.8
Potato	26	2	0.1
Butter	0	0	80
Milk	5.5	3.4	4.5

Q.5 **(a)** Describe the role of pancreatic hormones in carbohydrate metabolism 7

(b) Derive Michaelis-Menten equation for an uncompetitive enzyme inhibition. Comment on significance of Km. 7

OR

Q.5 **(a)** Schematically represent citric acid cycle, including the names of respective enzymes. Also explain the energy yield by citric acid cycle. 7

(b) Describe the enzyme classification system. Which enzyme is indicated as E.C. 1.1.1.1? 7

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