

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 V_m and K_m 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. 7
Comment on significance of K_m .

OR

- Q.5 (a)** Schematically represent citric acid cycle, including the names of respective enzymes. 7
Also explain the energy yield by citric acid cycle.
(b) Describe the enzyme classification system. Which enzyme is indicated as E.C. 1.1.1.1? 7
