

B.E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING SECOND YEAR SECOND SEMESTER – 2018

CHEMISTRY OF FOOD

Time: Three Hours

Full Marks: 100

Use Separate Answer scripts for each part

Different parts of the same question should be answered together

Part-I

Full Marks-50

1. Answer any one from (a) and (b)
 - a) Pectic substances, pectin grade, low ester pectin
How does pectin gel formation depend on sugar, pectin and acid. 6+4
 - b) Define resistant starch. Classify with example resistant starch. Mention the functional properties of resistant starch. Explain about waxy starch. 1.5+ 3+2.5+3
2. Answer any one from (a) and (b)
 - a) Describe the following tests for identification of carbohydrates: Molish test and Seliwanoff's test.
Discuss about amylase and amylopectin of starch. 5+5
 - b) What are hydrocolloids? Give example. Discuss about properties of hydrocolloids. Explain Carboxy methyl cellulose and Microcrystalline cellulose. 2+5+3
3. Answer any one from (a) and (b)
 - a) What are Carotenoids? State sources of different Carotenoids. What is meant by Isoprene unit? What are true flavonoids and compound related to flavonoids. 1.5+ 4+ 2+ 2.5
 - b) Discuss about Anthocyanin and Tannin. 2x5
4. Answer any two from (a) and (b) and (c)
 - a) Classify Vitamins according to their solubility. 5
 - b) Discuss about the vitamins, deficiency of which causes Beri-beri and Night blindness. 2x2.5
 - c) Describe Riboflavin and Tocopherol. 2x2.5
5. Answer any two from (a) and (b) and (c)
 - a) Mention the dietary sources of Calcium. State and explain the factors affecting the calcium absorption. 1.5+3.5
 - b) State the sources and functions of Phosphorous. 1.5+3.5
 - c) What is Osteoporosis and Low Sodium diet 2x2.5

[Turn over

B.E (FTBE) 2ND YEAR, 2ND SEMESTER EXAM 2018

CHEMISTRY OF FOOD

TIME: 3 H

FULL MARKS = 100

PART- II (50 MARKS)

USE SEPARATE ANSWER SCRIPT FOR EACH PART

Q1. Answer either (a) or (b) in this block.**(a) Describe the following (any 1):****1 × 5 = 5**

- I. The indices used to quantify the most important parameter that influences functional properties of proteins in foods.
- II. Importance of evaluating RM, K and P values for butter fat.

(b) Define the following:**5 × 1 = 5**

- I. Chemical score
- II. Conditionally essential amino acids
- III. Selectivity in hydrogenation of oils
- IV. WBC of proteins
- V. Saponification value

Q2. Differentiate between (any 2):**2 × 2.5 = 5**

- a. Prooxidants vs. Antioxidants
- b. Proteolysis vs. Putrifaction
- c. TD vs. co-efficient of protein digestibility

Q3. Explain any two from (a), (b) and (c) in this block.

5 + 5 = 10

- (a) The mechanism of oxidative rancidity.
- (b) Processed soybean oil differs in composition of SFA:MUFA:PUFA compared to the native oil.
- (c) Fats display slip melting point.

Q4. Answer any one from (a) and (b) in this block.

10

- (a) Illustrate the mechanism of gel formation in gelatin and egg-white gels.
- (b) Illustrate how you would rank the commonly consumed vegetable oils considering their SFA, MUFA and ω -3/ ω -6 PUFA contents, and their storage and stability criteria.

Q5. Answer any two from (a), (b) and (c) in this block.

10 + 10 = 20

- (a) How would you analyze PER, BV and NPU values of egg protein?
- (b) What properties of soya flour would you determine to ascertain its 'swelling' and 'foaming capacities'?
- (c) Analyze the data provided in the table below and recommend oils suitable for deep frying and shallow frying applications.

Oil	Smoke point (°C)	Flash point (°C)	Fire point (°C)
Corn, crude	178	294	356
Corn, refined	227	326	359
Linseed, refined	160	309	360
Olive, virgin	199	321	361
Soybean, crude	210	317	354