

B.E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING SECOND YEAR SECOND SEMESTER – 2019

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) What are carotenoids? State the sources of different carotenoids. What is Isoprene unit? Differentiate between: i) primary carotenoid and secondary carotenoid ii) true flavonoids and compound related to flavonoids. 1.5+ 4+ 1.5+ 3

b) Discuss about meat colour and Tannin. 2x5

2. Answer any one from (a) and (b)

a) What are hydrocolloids? Give example. Mention about occurrence of hydrocolloids.

Explain the functional properties of hydrocolloids. 2+2.5+5.5

b) Write short note on : 2x5

i) animal hydrocolloid.

ii) plant hydrocolloid.

3. Answer any one from (a) and (b):

a) Discuss about different pectic substances. What factors are responsible for quality of Gel formed by pectin. 5+5

b) Comment on:
jelly grade, low methoxyl pectin, Slow set pectin gel , rapid set pectin gel. 2.5x4

[Turn over

4. Answer any two from (a) and (b) and (c)

- a) State the Co- enzyme relationship of Pyridoxine, Folic acid and Nicotinic acid. 5
- b) Discuss about the vitamins, deficiency of which causes scurvy and Night blindness. 2x2.5
- c) Describe Riboflavin and Thiamine. 2x2.5

5. Answer any two from (a) and (b) and (c)

- a) Discuss about Phosphorus. 5
- b) State the sources and functions of Sodium . 1.5+3.5
- c) i)Mention the functions of Magnesium.
ii) Explain the effect of phosphates and phytic acid on Calcium absorbtion 2x2.5

B.E (FTBE) 2ND YEAR, 2ND SEMESTER EXAM 2019**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 edible fats.

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

- I. Limiting amino acids
- II. BV
- III. Prooxidants
- IV. HHC of proteins
- V. Ester value

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

- a. True fat vs. Crude fat
- b. Hydrolytic vs. Oxidative rancidity
- c. Denaturation vs. Proteolysis

[Turn over]

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

5 + 5 = 10

- (a) The mechanism of gel formation in egg-white gels.
- (b) Advantages and disadvantages of considering mustard oil as the best summer oil.
- (c) Reasons for occurrence of fat blooms.

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

- (a) How is selectivity governed during hydrogenation of oleic-acid rich oils? How does nutritional profile and storage-stability of these oils change during hydrogenation? **5 + 5**
- (b) Illustrate soya protein gel formation in presence of divalent ions. Can antinutritional factors of soya protein be affected during this process? **5 + 5**

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

10 + 10 = 20

- (a) How are PER, BV and NPU values of milk protein analyzed?
- (b) What properties of soya flour would you determine to ascertain its 'water binding' and 'swelling' capacities?
- (c) Considering SFA, MUFA and ω -3/ ω -6 PUFA contents, storage-stability criteria and the data given below, recommend oils suitable as summer and winter oils.

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