

B.E. (FTBE) SECOND YEAR, FIRST SEMESTER EXAMINATION 2024

FOOD CHEMISTRY

Time : 3 Hours

Full Marks : 100

Use separate Answer-script for each part.

PART- I (50 MARKS)

ANSWER Q1 AND ANY TWO FROM THE REST

Q1. Fill in the blanks:

10 × 2 = 20

- The ratio of $\omega 6:\omega 3$ fatty acids in India ideally should be.....
- The only synthetic antioxidant permissible in edible oils is.....
- Ghee has RM value of 15; when adulterated with dalda, its RM would be.....
-fat has the highest saponification number.
- Sterols comprise of.....portion of crude fat.
- An example of unconventional food protein source is.....
- Digestibility of food proteins is primarily influenced by
- Kunitz* inhibitors are classified as.....
- Essential amino acids whose concentrations in a protein-rich food is less than the reference protein are known as.....
- The principal bonding type that stabilizes a protein molecule both internally and externally is ofnature.

Q2. Answer any two:

2 × 7.5 = 15

- How are PER, BV and NPU values of egg protein analyzed?
- 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 with proper justification.

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

- How is selectivity governed during hydrogenation of oleic-acid rich oils? How does nutritional profile and storage-stability of these oils change during hydrogenation?

[Turn over

Q3. Write short notes on (any three):

3 × 5 = 15

- a. Importance of evaluating RM, K and P values for edible fats and oils with examples.
- b. Fats display slip melting point and its relation to occurrence of fat blooms.
- c. Explain the two types of protein gels and factors responsible for their stability.
- d. Ranking of commonly consumed vegetable oils based on their SFA, MUFA and ω -3/ ω -6 PUFA contents, and their storage-cum-stability criteria.

Q4. Differentiate between with examples and illustrations (any three):

3 × 5 = 15

- a. True fat vs. Crude fat
- b. Hydrolytic vs. Oxidative rancidity
- c. Denaturation vs. Proteolysis
- d. Prooxidants vs. Antioxidants
- e. TD vs. co-efficient of protein digestibility

Ref. No. : Ex/FTBE/BS/B/T/213/2024

**B.E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING
SECOND YEAR FIRST SEMESTER - 2024**

Food Chemistry

Time: 3hours

Full Marks: 100

Part II (50)

Answer any five questions from the following: 5x10

1. What is carbohydrate? Give one example each of aldohexose, reducing and non reducing disaccharides, and polysaccharide. Explain Seliwanoff's Test for identification of carbohydrates. 2+4+4
2. What is amylose? What is amylopectin? Explain gelatinization and retrogradation of starch 5+5
3. Explain with example setting time of gel formation. What is meant by 100 grade pectin ? State the differences between starch and cellulose. 3+2 +5
4. Define with example carotenoids, primary and secondary carotenoids. Mention the carotenoid responsible for colour of mango, orange and spinach. What is tannin? 4.5+3+2.5
5. Comment on Vitamin A, Vitamin C and Vitamin D. 3.5.+3.5+3
6. Mention the sources and functions of Iron, Sodium and Potassium. 4+3+3
7. Write short notes on any two of the following: 2x5
 - a. factors affecting pectin gel formation.
 - b. Chlorophyll.
 - c. alginate
 - d. health benefits of anthocyanin.