

B.E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING SECOND YEAR FIRST SEMESTER – 2025**FOOD CHEMISTRY****Time : Three hours**

Use separate answer scripts for each Part

Full Marks: 100**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 the following:**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

Q3. Write short notes on (any three):**3 × 5 = 15**

- Importance of evaluating RM, K and P values for edible fats and oils with examples.

[Turn over

- b. Fats display slip melting point and its relation to occurrence of fat blooms.
- c. Changes in nutritional profile and storage-stability of oils during hydrogenation.
- d. Quantification of limiting amino-acids in a protein-rich food.

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

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Food Chemistry

Time: 3hours

Full Marks: 100

Part II (50)

Answer any five questions from the following: 5x10

1. What is resistant starch? Mention with source different types of resistant starch. What is waxy starch? 2+6+2

2. Define flavonoid. Explain about chlorophyll.
Find the water soluble or fat soluble pigments in the following:
anthocyanin, anthoxanthin, carotenoids, lycopene. . 2.5+5.5+2

3. Differentiate between:
a) slow set pectin and rapid set pectin.
b) primary carotenoids and secondary carotenoids.
c) starch and glycogen 2.5+2.5+5

4. What is meant by pectic substances? Give name of different pectic substances. Define with example pectin grade. What is Gum Arabic? 2+2+3+3

5. What are the sources and functions of Sodium, Calcium and Iron. 3+3+4

6. State the sources, functions and deficiency problems of vitamin D and. Vitamin B₁ 5+5

7. Write short notes on any two of the following: 2x5
a) amylopectin
b) Molish Test for identification of carbohydrates
c) properties of flavonoids