

B.E (FTBE) 2ND YEAR, 2ND SEMESTER EXAM 2017

CHEMISTRY OF FOOD

TIME: 3 H

FULL MARKS = 100

PART- I (50 MARKS)

USE SEPARATE ANSWER SCRIPT FOR EACH PART

Answer Q1 and any Two from the rest

Q1. Answer the following:

- a. What is chemical score? Illustrate with suitable examples. 2 + 2
- b. Why is it impossible to determine melting point of oleic acid? How is selectivity governed during hydrogenation of oleic-acid rich oils? 4 + 2
- c. State the factors that affect functional properties of proteins. List the indices used to quantify the parameter which most influences functional properties of proteins in foods. 2 + 3
- d. Define RM, K and P values for fats and oils. Explain the importance of evaluating these for butter fat. 3 + 2

- Q2.** a. Explain with mechanism of gel formation how gelatin gels differ from egg-white gels. How does presence of divalent metal ions influence protein gel stability? 4 + 1
- b. Considering SFA, MUFA and (ω -3)/(ω -6) PUFA content of important vegetable oils of the world, which oil should be ranked first? Critically justify your answer considering the composition of at least three common edible oils consumed globally. 1 + 4
- c. Enumerate the different properties of soya flour you would determine to ascertain its 'water binding' and 'foaming capacity'. 5

[Turn over

- Q3.** a. Enlist the protein quality indices. Explain the significance of these indices with respect to any food protein of your choice. **2 + 3**
- b. Explain the mechanism of oxidative rancidity of oils. How would you avert the occurrence of the same in cooking oils? **3 + 2**
- c. Based on 'composition' of the oils and the 'information given below', which oils would you recommend for deep frying and which for shallow frying applications and why? **5**

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

Q4. Write short notes on (any 3):

3 × 5 = 15

- Trypsin inhibitory factors of soya proteins
- Hydrolytic rancidity
- Protein gel formation by limited hydrolysis
- Non-conventional sources of proteins
- Putrefaction

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Use Separate Answer Script for each Part

(50 marks for each part)

PART- II (50 Marks)

Answer question 1 and any two from the rest

1. A) Give one example in each case, reducing sugar but disaccharide, fat soluble pigment, natural gum, true flavonoid. 2
- B) Differentiate between:
- i) Natural starch and waxy starch
 - ii) Hemoglobin and myoglobin
 - iii) Primary carotenoid and secondary carotenoid.
 - iv) Slow set pectin gel and rapid set pectin gel. 8
- C) Explain the following: 5+5
- i) Seliwanoffs test and Bials test for identification of carbohydrates.
 - ii) Amylose and amylopectin of starch.
2. What are hydrocolloids? Give example. Mention about occurrence of hydrocolloids. Explain the functional properties of hydrocolloids. What are plant hydrocolloids. 2+2+6+5
3. A) What are carotenoids? State the sources of different carotenoids. Explain the effect of processing on carotenoids of fruits and vegetables. 1.5+3+5
- B) What are pectic substances? What factors are responsible for quality of Gel formed by pectin. 1.5+4

[Turn over

4. Write short note on (any 3):

3×5

- A) Animal hydrocolloid
- B) Resistant Starch
- C) Meat colour
- D) Tannin
- E) Anthocyanin