

B.E (FTBE) THIRD YEAR, SECOND SEMESTER EXAMINATION 2022

FOOD PROCESS TECHNOLOGY-IV

TIME: 3 H

FULL MARKS = 100

PART- I (50 MARKS)

ANSWER Q1 AND ANY TWO FROM THE REST

USE SEPARATE ANSWER SCRIPT FOR EACH PART

Q1. Describe briefly with the aid of flow sheets and schematic diagrams: 4 × 5 = 20.

- a. Manufacture of instant soluble coffee
- b. Minimal processing guidelines for 'broccoli florets' for preservation of its color and antioxidant properties
- c. Manufacture of soft drinks mentioning the CCPs
- d. 'Dry bag-indirect compression' HPP

Q2. a. How are removal of milk allergenicity and decolorization of hemoglobin effected during HPP? 4

b. Distinguish between 'pebbly' coffee beans and 'slimy' coffee beans. What conditions need to be precisely controlled during roasting of coffee? 4 + 3 = 7

c. Describe 'technical enzyme preparation' to be used for manufacture of sugar syrup of 'cola drink' to achieve its *desirable flavor* and *consistency*. 2 + 2 = 4

Q3. a. Enumerate the roles of the following enzymes in food processing choosing appropriate food product(s) for each enzyme. 4 × 2 = 8

1. Phytase
2. β -glucanase
3. Catalase
4. Xylanase

b. Besides roasting, which are the finishing operations in coffee processing that dictate its market price? 3

c. Why is HPP preferred for development of novel fish and egg products? 4

Q4. Distinguish between (any five): 5 × 3 = 15

- a. 'HPP-treated' apple juice and 'Pectinase-treated' apple juice

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- b. Washing of green bell pepper for 'Minimal Processing' vs. 'Tray drying'
- c. Enzymatic clarification of 'Beer' vs. 'Fruit juices'
- d. Role of proteases in 'Bakery' vs. 'Brewery'
- e. Browning inhibition by minimal processing in 'Apple rings' vs. 'Potato slices'
- f. Water treatment for 'Minimally processed salad preparation' vs. 'Soft drink manufacture'.

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BE(FTBE) 3RD YEAR 2 ND SEMESTER EXAMINATION 2022

FOOD PROCESS TECHNOLOGY IV

Time: 3hours

Total Marks: 50

Part II

Answer any five questions from the following: 5x10

1. Explain the factors affecting composition of milk. What is skimmed milk? 8+2
2. What are toned milk and double toned milk? Give the flow diagram of manufacture of toned milk. What are the main constituents of milk? 5+3.5+1.5
3. a) Comment on casein of milk.
 b) Condensed milk of 9.05% fat and 31% total milk solids is being prepared from 10000 kg milk containing 3.60% fat and 12.50% total milk solids. Cream from the same milk contains 40% fat. How much 40% cream must be added to provide the desired ratio of SNF to fat? 3.5+6.5
4. State the procedure of spray drying of milk. Explain about droplet formation and separation of air and powder for spray drying of milk. 3+7
5. Explain the following:
 / a) Steam requirement for drum drying process.
 , b) Efficiency of drum drying operation. 3.5+6.5
6. a) Differentiate between evaporated milk and sweetened condensed milk?
 b) Find out the evaporation rate in a drum drier,
 given: steam temperature 150⁰C, vaporization temperature of milk 103⁰C, overall heat transfer coefficient 1200 kcal/h m² °C, diameter of drum 60 cm, length of drum 100, cm, latent heat of vaporization 540 kcal/ kg. The product is scraped at ¾ of a revolution of the drum. 3.5+6.5
7. Write short note on: 2x5
 a) Milk carbohydrate b) classification of spray driers