

Dairy and Food Engineering [BTAP3207]

ASSIGNMENT-1

Section-A: Short Answer Questions

1. What is NDDB? When this act was established in India.
2. Differentiate between pasteurization and sterilization.
3. Explain about different constituents of milk.
4. Write down the factors affecting composition of milk.
5. Differentiate between boiling point and freezing point of milk.
6. What are the important properties of milk, which affect the processing?
7. If the Lactometer reading becomes 31.0 at 66°F, what is the corrected specific gravity of milk?
8. How the density and viscosity of milk affect the milk processing operations?
9. Write about different methods of pasteurization with temperature time combinations.
10. Write short note on basic features of a milk transport tank for receiving of bulk milk.
11. Differentiate between VAT pasteurization and HTST pasteurization process.
12. Explain about Aseptic sterilization with the flow diagram.
13. Write short notes on pressure control system in a HTST Pasteurization process.
14. If you have received 1000 kg of milk with 5% fat content, then how can you change it to toned milk & double toned milk?
15. I have received 100 kg of cow milk with 4.5% fat. How much water is to be added to it to make it to 3% fat?
16. Why the freezing temperature of the milk is slightly lower than water?
17. What are the factors that affect the flavor and color of milk?
18. Standard toned milk is evaporated in such a way that the final solid in toned milk is 35%. What is the amount of evaporation?
19. Milk with sp. gravity 1.032 & fat 3% is taken. Find total solids & total SNF.
20. Write a short note on UHT pasteurisation.

Section-B: Long Answer Questions

1. Define and distinguish between the different forms of milk and milk products?
2. Write short notes on density and specific gravity of milk. Also explain the determination of specific gravity by Lactometer.
3. What is the amount of total solids and SNF with a milk having 3.5% fat and density of milk is 1020 kg/m³ (@20°C).
4. Draw the process flow chart for preparation of Cheddar Cheese.
5. Draw the process flow chart for preparation of ice cream.

6. 1000 L of milk with 3% fat & 8.5% SNF has been evaporated so that the final fat content is 6%. After that 200 kg of sugar has been added. Find the total soluble solid of milk.
7. if I add milk with 1.5% fat with another sample with 6.5% fat to get final fat as 3.16%. What should be the ratio of 2 milks?
8. Explain HTST pasteurization process with a neat sketch.
9. What are the different methods to reduce fouling in UHT sterilization process?
10. Draw the process flow chart for preparation of Cottage Cheese.
11. Draw the process flow chart for preparation of Butter milk.
12. If you have received 1000 kg of milk from a m.c. with 5% fat content. How can you change it to toned milk & double toned milk?
13. 1000 L of milk 3% fat & 8.5% NF has been evaporated so that the final fat con. Is 6%. After that 200 kg of sugar has been added. Find the total soluble solid of milk.
14. Explain the different types of milk silos.
15. What are the relative advantages and disadvantages of HTST pasteurizers over batch pasteurizers?
16. Explain the difference between the conventional canning and aseptic processing.
17. Name the important accessories in a batch sterilizer and explain their functions.
18. Why is it required to maintain high pressure in the sterilization chamber in UHT sterilization? What is the normal range of pressure maintained?
19. If orange juice is as such evaporated at high temperature, it results in a flat flavour from the loss of volatile constituents during evaporation. A process was used earlier to overcome the problem by concentrating the extracted juice to 58% solids in vacuum evaporators and blending the concentrate with unconcentrated juice to a final product with 42% solids.
20. In the manufacture of jam, the crushed fruit is mixed with sufficient sugar to give a mixture of 45 parts of fruit to 55 parts of sugar. The mixture is then evaporated until the soluble solids are 67%. What yield of jam is expected from a fruit which has 14% soluble solids.

ASSIGNMENT-2

Section-A: Short Answer Questions

1. What is Homogenization and its advantages?
2. Explain four different forms of fat globules in milk.
3. Explain about different forces acted on the milk fat during homogenization.
4. Write short note on homogenizing pump.
5. What is the temperature and pressure maintained during homogenization?
6. Write down the application of Disc bowl centrifuge.
7. Differentiate between spray and drum drying.
8. What is temperature and atomization pressure maintained in a spray dryer.
9. Write down the different types of feeding system used in a drum dryer.
10. Differentiate between free moisture and unbound moisture.
11. Write down classification of filters?
12. What are the different membrane modules?
13. Write short notes on reverse osmosis.
14. Write short notes Nano filtration.
15. Write short notes, ultra-filtration.
16. Write short notes on microfiltration.
17. Define (a) Butterfat (b) AMF (c) Butter oil (d) Butter.
18. State the different expressions for butter yield calculations.
19. What is benefits of using calcium chloride in making cheddar cheese.
20. What is temperature of coagulation and pH of milk for making good qualities of paneer.

Section-B: Long Answer Questions

1. Explain different components of homogenizer and the working principle.
2. Explain the working principle of Tubular bowl centrifuge with neat sketch.
3. Explain the working principle of Disc centrifuge with neat sketch.
4. Write down the working principle of drum drying with diagram.
5. Explain the drying rate curves with different stages of drying.
6. Different between Plate and frame filter press and Shell and leaf filters.
7. Write the construction and operation of Plate and frame filter press.

8. Explain the different membrane techniques.
9. Write short notes on pervaporation, electro dialysis, ion exchange methods of separation.
10. Draw the flow chart for butter manufacture and state the principal equipment used.
11. What are the different types of butter making process?
12. Briefly describe (a) continuous floatation churns (b) ripening of cream (c) working of butter (d) main constituents of butter.
13. Write down the process of manufacturing of Ice cream.
14. Write down the industrial process for manufacturing of paneer.
15. What are the factors that affecting the quality and yield of Paneer?

ASSIGNMENT-3

Section-A: Short Answer Questions

1. What are the main factors causing deterioration during storage?
2. Write down the different functions of a packaging material.
3. Differentiate between Shipping container and Retail container.
4. Differentiate between filling by gravity flow and filling by metering.
5. Write short note on metering Cup Filling System and Piston Type Filling System.
6. How the filling of pasty milk product is performed?
7. What is aseptic filling and what the requirements of an aseptic filling system?
8. Write down the three aseptic filling systems for using blow-moulded bottles.
9. What are the advantages of good plant layout?
10. Differentiate between line flow process and intermittent flow process.
11. What is Decimal Reduction Time?
12. What is Lethality of a Thermal process?
13. What is z value for enzyme inactivation?
14. Write the methods of preservation using chemical.
15. Name 4 different accepted chemical food preservatives.
16. What is Nano technology? Write down its application in food processing.

Section-B: Long Answer Questions

1. Explain in details about the basic requirements of a packaging material.
2. What are the types of packaging material used for packaging of milk and milk products?
Explain with examples.
3. What is filling by gravity flow? Explain the working principle of the equipment used for the purpose.
4. Explain about aseptic filling for blow moulded plastic bottles with diagram.
5. Draw the flow chart for a Sachet Form-Fill-Seal System.
6. What is piston type filling system? Explain the principles of operations with neat sketch.
7. Explain the four methods of metering and filling of dry milk product.
8. Explain the working principles of aseptic filling for plastic pouches with diagram.
9. Draw the sequence of operations that are carried out in an onion dehydration plant.

10. Draw different arrangement of equipment in a Dairy plant.
11. What are the difference factors in planning a layout of any plants?
12. Explain the physical method of preservation of food.
13. Explain the application of Nano technology in Food packaging.