

# Dairy and Food Engineering

## MCQ

1. Which of the following does not accelerate the rate of oxidation of fat?

- a) Presence of iron and copper salts
- b) Presence of dissolved oxygen
- c) Exposure to light
- d) Presence of water

Ans: d

2. \_\_\_\_\_ is the principal contributor to sunlight flavor.

- a) Methional
- b) Ethane
- c) Heptanes
- d) Acid

Ans: a

3. Enzyme responsible for Lipolysis is \_\_\_\_\_

- a) Pepsin
- b) Pectinase
- c) Lipases
- d) Rennin

Ans: c

4. The purpose of heat treatment on milk is \_\_\_\_\_

- a) Kill pathogenic microorganism
- b) Heat milk
- c) Evaporation
- d) Taste enhancement

Ans: a

5. \_\_\_\_\_ is recommended in order to avoid cream plug formation.

- a) Cooling
- b) Freezing
- c) Churning
- d) Homogenization

Ans: d

6. Most Heat sensitive vitamin in milk is?

- a) Vitamin A
- b) Vitamin B
- c) Vitamin C
- d) Vitamin D

Ans: c

7. Heat treatment on minerals results leads to \_\_\_\_\_

- a) Clumps formation
- b) Bubble formation
- c) Foul smell
- d) Loss of cheese making characteristics

Ans: d

8. Opacity in milk is due to which of the following reasons?

- a) White color
- b) Heat treatment
- c) Additives
- d) Suspended particles of fat

Ans:d

9. Yellowish tinge in milk can be attributed to which of the following?

- a) Carotene
- b) Water
- c) Riboflavin
- d) Metalin

Ans: a

10. In an equation Fat%, SNF% and water determine 'd'. The 'd' in this expression is?

- a) Viscosity
- b) Friction force
- c) Density
- d) Acceleration

Ans: d

11. Calculate the density of milk at 15.5°C having 3.2% fat and 8.5% SNF.

- a) 2.03 g/cm<sup>3</sup>
- b) 1.03 g/cm<sup>3</sup>
- c) 4.03 g/cm<sup>3</sup>
- d) 5.03 g/cm<sup>3</sup>

Ans: d

12. Freezing point helps to check which of the following adulteration in milk?

- a) Sugar adulteration
- b) Water adulteration
- c) Gas adulteration
- d) Color adulteration

Ans: b

13. pH of normal milk is \_\_\_\_\_ at 25°C.

- a) 4
- b) 4.3
- c) 6.6
- d) 9

Ans: c

14. The first milk that a cow produces after calving is called \_\_\_\_\_

- a) Cream
- b) Butter
- c) Colostrum
- d) High fat milk

Ans: c

15. Tests for proper pasteurization are based on the activity of which enzyme?

- a) Lactase
- b) Diastase
- c) Phosphatase
- d) Catalase

Ans: c

16. What is the freezing point of milk?

- a) 0 °C
- b) -0.55 °C
- c) -1 °C
- d) -1.55 °C

Ans: b

17. What is the average boiling point of milk?

- a) 100-101 °C
- b) 105-110 °C
- c) 115-117 °C
- d) 102-105 °C

Ans: a

18. What is the average specific gravity of normal whole milk at 16 °C?

- a) 0.903
- b) 1.032
- c) 1.582
- d) 2.032

Ans: b

19. Legal butter must contain at least what percentage of fat?

- a) 70 %
- b) 80 %
- c) 90 %
- d) 95 %

Ans: b

20. The process of raising or lowering the percent of fat in milk or cream to the desired standard is called?

- a) Enrichment
- b) Fortification

- c) Standardization
- d) Addition

Ans: c

21. Disruption of fat globules into much smaller fat globules is defined as?

- a) Standardization
- b) Centrifugation
- c) Homogenization
- d) Chilling

Ans: d

22. Disintegration of fat globules in homogenization is achieved by which of the following?

- a) Turbulence
- b) Cavitation
- c) Turbulence and cavitations
- d) Pasteurization

Ans: c

23. Cream with higher fat content than \_\_\_\_ cannot normally be homogenized at the normal high pressure.

- a) 5%
- b) 10%
- c) 12%
- d) 15%

Ans: c

24. Homogenization temperature applied normally are \_\_\_\_\_

- a) 30- 40°C
- b) 50- 60°C
- c) 60- 70°C
- d) 90-100°C

Ans: c

25. Preferred Homogenization pressure is \_\_\_\_\_

- a) 5- 15 MPa
- b) 10-25 MPa
- c) 25- 50 MPa
- d) 60-70 MPa

Ans: b

26. The dispersion of the lipid phase increases with \_\_\_\_\_ temperatures of homogenisation and is commensurate with the \_\_\_\_\_ viscosity of milk at higher temperatures.

- a) Increase, decrease
- b) Increase, increase

- c) Decrease, increase
- d) Decrease, decrease

Ans: b

27. Application of Single-stage homogenization is in?

- a) Products demanding a high viscosity (certain cluster formation).
- b) Product with low viscosity
- c) Product with no viscosity
- d) Product without fat

Ans: a

28. Two-stage homogenization may not be applied to which of the following?

- a) Products with a high fat content
- b) Products where high homogenization efficiency is desired.
- c) Product with low viscosity
- d) Product demanding high viscosity

Ans: d

29. Two-stage method is usually chosen to achieve optimal homogenization efficiency.

- a) True
- b) False

Ans: a

30. Homogenization of milk may give milk which of the following off-flavor?

- a) Fruity
- b) Bitter
- c) Sunlight
- d) Salty

Ans: c

31. Homogenization reduce the size of fat globules to which size?

- a) Less than  $2\mu$
- b) Less than  $3\mu$
- c) Less than  $4\mu$
- d) Less than  $5\mu$

Ans: a

32. Homogenization has which of the following effects on the physiology of nutrition of milk?

- a) Improved digestibility
- b) Reduced digestibility
- c) Cholesterol
- d) Sugar

Ans: a

33. Which of the following packaging material should be used in order to avoid off flavor formation in homogenized milk?

- a) Transparent Glass bottles
- b) Transparent bags
- c) Opaque containers
- d) Transparent containers

Ans: c

34. In order to prevent sedimentation in homogenized milk which of the following measure prove effective?

- a) Heating
- b) Pasteurization
- c) Concentration of milk
- d) Filtration/clarification of milk prior to homogenization

Ans: d

35. Main function of first stage of homogenization is?

- a) Fat globule reduction
- b) Separation of clusters of fat into individual fat molecules
- c) Oxidation
- d) Off flavor development

Ans: a

36. Main function of Second stage of homogenization is?

- a) Fat globule reduction
- b) Separation of clusters of fat into individual fat molecules
- c) Oxidation
- d) Off flavor development

Ans: b

37. Statement related to the process of evaporation that is incorrect is?

- a) Evaporation occurs at any temperature
- b) Evaporation takes place within liquid
- c) Temperature may change during evaporation
- d) No bubbles are formed in liquid during evaporation

Ans: b

38. Rate of evaporation is \_\_\_\_\_

- a) directly proportional to temperature of liquid
- b) inversely proportional to temperature of liquid
- c) independent of temperature of liquid
- d) directly proportional to humidity of surrounding air

Ans:a

39. Rate of evaporation increases as?

- a) exposed surface area of liquid increases
- b) exposed surface area of liquid decreases
- c) movement of air above surface of liquid decreases
- d) atmospheric pressure increases

Ans: b

40. Rate of evaporation decreases as?

- a) temperature increases
- b) humidity of surrounding air increases
- c) movement of air above surface of liquid increases
- d) atmospheric pressure decreases

Ans: b

41. Which of the following factors do not affect the rate of evaporation?

- a) Temperature of liquid
- b) Humidity of surrounding air
- c) Depth of liquid
- d) Surface of liquid

Ans: c

42. Evaporation occurs only \_\_\_\_\_

- a) after boiling
- b) after extreme cooling
- c) at surface of a liquid
- d) if boiling occurs at atmospheric pressure

Ans: c

43. Evaporation in dairy industry is a preliminary step to which of the following process?

- a) Drying
- b) Flavoring
- c) Watering
- d) Pasteurization

Ans: a

44. Evaporation in dairy industry is done under \_\_\_\_\_

- a) Vacuum
- b) Heater
- c) Dryer
- d) Pasteurizer

Ans: a

45. Which evaporators can be used when a low degree of concentration is required?

- a) Falling film evaporator
- b) Circular type evaporator
- c) Tubular type evaporator
- d) Plate type evaporator

Ans: b

46. The evaporator in which the material to be evaporated boils outside the horizontal tube and steam condenses inside the tubes is called \_\_\_\_\_

- a) Horizontal tube evaporator
- b) Vertical tube evaporator

- c) Vacuum pan evaporator
- d) Forced circulation evaporator

Ans: a

47. Evaporator which promotes natural circulation is?

- a) Horizontal tube evaporator
- b) Vertical tube evaporator
- c) Vacuum pan evaporator
- d) Forced circulation evaporator

Ans: b

48. Evaporators in which pumps are used to force the evaporating liquid through the tubes are called?

- a) Horizontal tube evaporator
- b) Vertical tube evaporator
- c) Vacuum pan evaporator
- d) Forced circulation evaporator

Ans: b

49. Name of the evaporator which consists of one pass vertical shell and tube heat exchanger discharging the product to be evaporated into a relatively small vapor head?

- a) Horizontal tube evaporator
- b) Long tube vertical evaporator
- c) Vacuum pan evaporator
- d) Forced circulation evaporator

Ans: b

50. The deflector used in long tube vertical evaporator can be used as?

- a) Vapor separator
- b) Foam breaker
- c) Pasteurizer
- d) Vapor separator and foam breaker

Ans: d

51. Which of the following is the disadvantage of climbing film evaporator?

- a) Severe scale formation
- b) Over heating
- c) Small concentration
- d) Low pressure

Ans: a

52. As the film rises further evaporation occurs until they reach the top of the tubes. The mixture of vapor and milk then passes into a separate chamber from which the vapor passes to a condenser. Name the evaporator.

- a) Climbing film evaporator
- b) Falling film evaporator



- c) Plate evaporator
- d) Forced circulation evaporator

Ans: a

53. Which of the following is not the advantage of falling film evaporator?

- a) Short residence time of liquid
- b) Good performance with small temperature difference across heating surfaces
- c) Operates at lower temperature difference than rising film evaporator
- d) Long residence time of liquid

Ans: d

54. Great economies of operation may be made in large installations with \_\_\_\_\_

- a) Multiple effect evaporator
- b) Centri-therm evaporator
- c) Falling film evaporator
- d) Rising film evaporator

Ans: a

55. Device used to improve thermal efficiency of an evaporator is called?

- a) Thermo compressor
- b) Deareater
- c) Dryer
- d) Pasteurizer

Ans: a

56. Evaporators in the dairy industry don't concentrate which of the following?

- a) Whole and skimmed milk
- b) Whey
- c) Condensed milk
- d) Cheese

Ans: d

57. Ratio of capacity to economy is known as \_\_\_\_\_

- a) Water consumption per hour
- b) Steam consumption per hour
- c) Sediment consumption per hour
- d) Milk consumption per hour

Ans: b

58. The membrane filtration level with the smallest pore size (0.0001 – 0.001  $\mu\text{m}$ ) is called \_\_\_\_\_

- a) Micro filtration
- b) Reverse osmosis
- c) Nano filtration
- d) Ultra filtration

Ans: b

59. The flow rate through the membrane filter itself expressed as a gallon per square foot per day is called?

- a) Permeate
- b) Head loss
- c) Flux
- d) Overhead

Ans: c

60. Pore size Micro-filtration membrane ranges from \_\_\_\_\_

- a) 0.1- 5 $\mu$ m
- b) 0.1- 0.01 $\mu$ m
- c) 0.001- 0.01 $\mu$ m
- d) 0.0001- 0.001 $\mu$ m

Ans: a

61. Pore size Ultra-filtration membrane ranges from \_\_\_\_\_

- a) 0.1- 5 $\mu$ m
- b) 0.1- 0.01 $\mu$ m
- c) 0.001- 0.01 $\mu$ m
- d) 0.0001- 0.001 $\mu$ m

Ans: b

62. Pore size Nano-filtration membrane ranges from \_\_\_\_\_

- a) 0.1- 5 $\mu$ m
- b) 0.1- 0.01 $\mu$ m
- c) 0.001- 0.01 $\mu$ m
- d) 0.0001- 0.001 $\mu$ m

Ans: c

63. Pore size RO membrane ranges from \_\_\_\_\_

- a) 0.1- 5 $\mu$ m
- b) 0.1- 0.01 $\mu$ m
- c) 0.001- 0.01 $\mu$ m
- d) 0.0001- 0.001 $\mu$ m

Ans: c

64. The solution to be concentrated or fractionated is called?

- a) Feed
- b) Flux
- c) Membrane fouling
- d) Permeate

Ans: a

65. Which of the following membrane separation technique would be most suitable for dehydration of whey in dairy industry?

- a) Reverse osmosis
- b) Nano filtration

- c) Ultra filtration
- d) Membrane filtration

Ans: a

66. Which of the following membrane separation technique would be most suitable for partial desalination of whey in dairy industry?

- a) Reverse osmosis
- b) Nano filtration
- c) Ultra filtration
- d) Membrane filtration

Ans: b

67. Which of the following membrane separation technique would be most suitable for the concentration of milk proteins in dairy industry?

- a) Reverse osmosis
- b) Nano filtration
- c) Ultra filtration
- d) Membrane filtration

Ans: c

68. Which of the following membrane separation technique would be most suitable for the reduction of bacteria in skim milk?

- a) Reverse osmosis
- b) Nano filtration
- c) Ultra filtration
- d) Membrane filtration

Ans: d

69. What is the Processing temperature in membrane filtration applications?

- a) 15°C
- b) 25°C
- c) 65°C
- d) 50°C

Ans: d

70. What is necessity of a good Plant layout?

- a. To maximize the profit
- b. To minimize the profit
- c. Both
- d. None of the above

Ans: a

