

Subject: Dairy Chemistry

- Casein is present in milk as
 - Colloid
 - Emulsion
 - Suspension
 - Dispersion
- Technically, liquid obtained on removal of fat and casein from milk is termed as:
 - Milk plasma
 - Butter milk
 - Milk serum
 - Skim milk
- In Kjeldahl method of nitrogen estimation, indicator comprises of
 - Methyl red + Methylene blue
 - Methyl orange + Methylene blue
 - Methyl orange + Bromophenol blue
 - Methyl red + Bromophenol blue
- Which statement is not correct for Maillard reaction
 - It starts with interaction between reducing sugar and amino group of protein/peptides/amino acids
 - Lysine participates most actively in Maillard reaction
 - Lactose in milk readily take part in Maillard reaction
 - Maillard reaction also occurs due to thermal dehydration of sugars
- Inhibitory effect of milk peptides on the angiotensin converting enzyme (ACE inhibition) is used for making products for controlling
 - Cholesterol
 - Immune functions
 - Hypertension
 - Osteoporosis
- Which of the following is not associated with Maillard browning?
 - Schiff's base
 - Amadori compounds
 - Strecker degradation
 - Gelation
- Amongst the derivatives of lactose, _____ is an anomer of lactose
 - Lactobionic acid
 - Epilactose
 - Lactulose
 - Lactitol
- Systematic name of alpha lactose
 - 4-O- β -D-galactopyranosyl- α -D-glucopyranose
 - 4-O- β -D-galacto- α -D-glucopyranose
 - 4-O- α -D-galactopyranosyl- β -D-glucopyranose
 - O- β -D-galactopyranosyl- α -D-glucopyranose

9. Which among the following is a major allergen present in milk
- β -Lactoglobulin
 - Bovine Serum Albumin (BSA)
 - Lactoferrin
 - α -Lactalbumin
10. Which is an anti-hemorrhagic Vitamin
- Vitamin A
 - Vitamin E
 - Vitamin K
 - Vitamin C
11. Calcium phosphate is associated in casein micelle in the form of _____
- $\text{Ca}_9(\text{PO}_4)_6$
 - Calcium hepatite
 - O-calcium phosphate
 - Tricalcium phosphate
12. Which of the following agent is generally used to reduce the disulfide bridges during the SDS-PAGE
- Sodium dodecyl sulfate
 - Mercapto ethanol
 - Ethanol
 - Urea
13. Which of the following statement is not true with respect to homogenization
- Homogenized milk is white due finer dispersion of the fat
 - Raw homogenized milk is very susceptible to hydrolytic rancidity
 - The average size of the fat globules in homogenized milk is $1 \mu\text{m}$
 - Heat stability of whole milk increases after homogenization
14. Thiobarbituric acid(TBA) test used for measuring the lipid oxidation measures
- Peroxides
 - Malanoaldehydes
 - Conjugated dienes
 - Non-carbonyl compounds
15. In the formol titration procedure for the determination of protein in milk, the following reagent is used to prevent the interference of calcium
- Potassium oxalate solution
 - Potassium chloride solution
 - Sodium hydroxide solution
 - Formaldehyde solution
16. Which of the following statement is not true
- Acidification of milk is accompanied by solubilisation of colloidal calcium phosphate
 - Solubility of calcium phosphate in milk increases with increasing temperature
 - Addition of alkali to milk converts soluble calcium phosphate to colloidal phase
 - Addition of calcium salts to milk decreased the concentration of soluble phosphate in milk

17. The principal acid formed on heating the lactose at temperature above 100 °C is
- Oxalic acid
 - Lactobionic acid
 - Lactic acid
 - Formic acid
18. The nomenclature A1 and A2 milk is based on the difference in amino acid of _____
- κ -casein
 - β -casein
 - β -lactoglobulin
 - α -lactalbumin
19. Lactulose is a disaccharide consisting of
- Glucose – Fructose
 - Glucose – Glucose
 - Galactose – Fructose
 - Glucose – Galactose
20. Antigen binding site on an antibody comprises of
- C terminal side of heavy and light chain
 - N terminal side of heavy chain only
 - N terminal side of heavy and light chain
 - C terminal side of light chain only
21. Normally β -Lactoglobulin occurs in milk as a
- Monomer
 - Dimer
 - Trimer
 - Octomer
22. The most common member of conjugated linoleic acid (CLA) is
- c9,c11-CLA
 - t10,c12-CLA
 - c9,t11-CLA
 - t10,t12-CLA
23. The destabilization of the fat emulsion of ice cream mix is initiated by:
- The action of emulsifiers
 - Incorporation of air
 - The action of stabilizers
 - Freezing and mechanical agitation
24. Major salts responsible for the buffering capacity of milk
- Citrates
 - lactates
 - carbonates
 - phosphates

25. CM Sephadex C-50 is a matrix used for
- Cation exchange chromatography
 - Anion exchange chromatography
 - Gel permeation chromatography
 - Affinity chromatography
26. Separation technique based on the molecular sieving action is ____ chromatography
- Gel filtration
 - Partition
 - Ion exchange
 - Adsorption
27. Ninhydrin is used as a chromogenic reagent in the paper chromatographic analysis of _____
- Carotenoids
 - Sugars
 - Amino acids
 - Fatty acids
28. Which of the following is a measure of average molecular weight or chain length of Fatty acid
- B.R. Reading
 - R.M. value
 - Iodine value
 - Saponification value
29. Glycerol is added to sample buffer during electrophoresis to
- Increase the density of sample
 - Enhance the charge on proteins
 - To denature proteins
 - Increase the solubility of proteins
30. Major constituent responsible for the specific conductance of mastitic milk is
- Lactose
 - Chloride
 - Protein
 - Fat
31. Proteose peptone are
- N terminal breakdown fragment of α casein
 - C terminal breakdown fragment of α casein
 - C terminal breakdown fragment of β casein
 - N terminal breakdown fragment of β casein
32. The most abundant fatty acid in milk fat is
- C_{18:1}
 - C_{16:0}
 - C_{20:0}
 - C_{18:2}

33. Reverse phase chromatography comprises of _____phase.
- Non-polar mobile phase polar stationary phase
 - Non-polar mobile phase and non-polar stationary phase
 - Polar mobile phase and polar stationary phase
 - Polar mobile phase and non-polar stationary phase
34. Lactone is a major contributor to the flavour of _____
- Ghee
 - Yoghurt
 - Whole milk powder
 - Cheese
35. State of lactose in spray dried milk is
- Crystalline
 - Supersaturated
 - Glass
 - Polymorphic
36. Formalin is _____
- 30% formaldehyde
 - 20% formaldehyde
 - 40% formaldehyde
 - 50% formaldehyde
37. Mass crystallization occurs when lactose is in _____
- supersaturated state
 - metastable state
 - unsaturated state
 - critical point of super solubility
38. Rennet used for cheese manufacture possesses:
- High clotting activity but low proteolytic activity.
 - Low clotting activity but high proteolytic activity
 - High clotting activity as well as high proteolytic activity
 - Low clotting activity as well as low proteolytic activity
39. The function of acetic acid in the mixture of n butanol: acetic acid: water used for separation of amino acids is
- Allows more water to be incorporated
 - Changes the pH to basic
 - Changes the pH to acidic
 - Keeps the pH neutral
40. Rancimat is used for determining _____
- Viscosity
 - Oxidative rancidity
 - Hydrolytic rancidity
 - Acidity

41. Hydrogenation of fats produces
- Trans fatty acids
 - Short chain fatty acids
 - Long chain fatty acids
 - Unsaturated fatty acids
42. Which of the following vitamins has inverse relationship with oxidation reduction potential of milk?
- Folic acid
 - Ascorbic acid
 - Pyridoxine
 - Pantothenic acid
43. Which form of fat crystals is most stable?
- α - form
 - β' - form
 - β - form
 - γ - form
44. Reversed phase system are obtained by impregnating TLC plates with _____
- Water
 - Silicone oil
 - Chloroform
 - Acetic acid
45. Which of the following cannot be called a lipid?
- Cholesterol
 - Carotenoids
 - Oleic acid
 - Glycerol
46. Preheating of milk esp. at 90°C /10 min results in:
- Decrease in heat stability
 - Increase in ionic calcium
 - Increase in heat stability
 - Decrease of Maillard browning
47. HCT curve of type B milk is converted to type A milk by adding
- k-casein
 - β -lg
 - β -casein
 - α -la
48. Agglutination means
- Phase separation of fat
 - Hydrolysis of fat
 - Separation of Fat
 - Flocculation of fat

49. Which of the following is considered to be the most potent for essential fatty acid activity
- Trans fatty acid
 - α -linolenic acid
 - γ -linolenic acid
 - Arachidonic acid
50. Lactoferrin is partly saturated with iron to the extent of _____
- 8-30%
 - 60-80%
 - 40-50%
 - 2-5%
51. Two inhibitors present in milk for iron absorption are
- Calcium, lactose
 - Phosphorus, lactose
 - Calcium, casein
 - Phosphorus, casein
52. Phospholipids are present as phosphor protein complex in _____
- Whey protein
 - Milk fat globule membrane
 - Triglyceride
 - Non protein nitrogen
53. Relationship between chloride and lactose is known as
- Koestler number
 - WPN number
 - Vieth number
 - Utrecht number
54. In both model and food systems, Maillard browning has been described most frequently to allow
- First order kinetics
 - Second order kinetics
 - Zero order kinetics
 - Third order kinetics
55. Guard column in HPLC is installed between
- The injector and analytical column
 - After the analytical column
 - Before the pumping device
 - Before the detector
56. In heated milk, protein – protein interaction is due to complex formation of
- α -casein/ β -casein
 - k-casein/ β -lactoglobulin
 - α 2-casein/ β - casein
 - β -lactoglobulin/lactose

57. The changes in secondary and tertiary structures of whey proteins during heating of milk are known as
- Denaturation
 - Hydrolysis
 - Polymerization
 - Coupling
58. The refractive index of fats and oils is measured by
- Lyophilizer
 - Polarimeter
 - Infra-red Spectrophotometer
 - Butyro Refractometer
59. Which of the following biological activities is related to phosphor peptides?
- Immunomodulation
 - Antimicrobial
 - Mineral binding
 - Opioid
60. A zero value of Transmittance in spectroscopic techniques represent
- A totally transparent substance
 - A totally colloidal solution
 - A totally opaque substance
 - A true solution
61. Lactose is composed of D-galactose and D-glucose linked through
- α (5-8)
 - β (5-8)
 - α (1-4)
 - β (1-4)
62. Enzyme that can act on starches are called
- Pepsin
 - Amylase
 - Trypsin
 - Pectinase
63. The following is not a potent anti-oxidant
- Capsaicin
 - Tertiary butyl hydro quinone
 - Nordihydroguaretic acid
 - Casoxin
64. β -lactoglobulin begins to unfold and loses its globular structure when milk is heated beyond
- 48°C
 - 65°C
 - 55°C
 - 72°C

65. Which of the following ingredients has most pronounced effect in decreasing the water activity?
- Sugar
 - Lipids
 - Protein
 - Phospholipids
66. Relation between pH and pOH is expressed as _____.
- $\text{pH} - \text{pOH} = 14$
 - $\text{pH} + \text{pOH} = 7$
 - $\text{pH} - \text{pOH} = 7$
 - $\text{pH} + \text{pOH} = 14$
67. Enzyme lipase is likely to attack fat globules
- Before homogenization
 - Before cream separation
 - After homogenization
 - After pasteurization
68. As per FSSAI rules, the maximum permissible moisture % in ghee is:
- 0.1
 - 0.3
 - 0.5
 - 0.7
69. The glycomacropeptide released during rennet action is a fragment of k-casein
- f (104-169)
 - f (106-169)
 - f (105-160)
 - f (107-169)
70. Rosalic acid test is used to detect the adulteration in milk by
- Neutralizers
 - Salt
 - Starch
 - Urea
71. Which statement is true with respect to non-protein nitrogen (NPN) in milk
- Nitrogen soluble in 12% trichloroacetic acid (TCA) is referred as NPN
 - Nitrogen soluble at pH 4.6 is referred as NPN
 - Nitrogen insoluble in 12% trichloroacetic acid (TCA) is referred as NPN
 - Nitrogen insoluble at pH 4.6 is referred as NPN
72. Concentration of calcium (mg /100 ml) in buffalo milk is
- 50
 - 110
 - 245
 - 180

73. Casein has more _____ than whey protein
- Emulsifying ability
 - Gelling ability
 - Solubility
 - Hydrophobicity
74. The ash content (%) of bovine milk
- 0.40
 - 1.20
 - 0.70
 - 0.20
75. Fraction of total calcium of milk in dissolved state is
- 1/2
 - 1/3
 - 2/3
 - 3/4
76. According to FSSAI, minimum fat content required for toned milk is
- 3.0%
 - 2.5%
 - 4.5%
 - 6.0%
77. At the pH of milk, the proteins carry a net charge which is
- no charge
 - negative
 - positive
 - amphoteric
78. Average (%) nitrogen content in milk protein is
- 5.6
 - 0.63
 - 15.65
 - 18.0
79. The whey protein fraction that is absent in human milk is
- α -Lactalbumin
 - β -Lactoglobulin
 - Serum albumin
 - Immunoglobulins
80. Which of the following reagents is used for determining the hardness of water
- Trichloroacetic acid (TCA)
 - Calcium chloride
 - EDTA
 - Magnesium sulfate

81. All the proteins in milk can be precipitated by
- 0.4% Formaldehyde
 - 10% Hydrochloric acid (HCl)
 - 5% Copper sulfate
 - 12% Trichloroacetic acid (TCA)
82. The major non-protein fraction in Cow milk is
- Urea
 - Orotic acid
 - Taurine
 - Creatinine
83. Which for the following is called chroman derivative?
- Vitamin D
 - Vitamin A
 - Vitamin K
 - Vitamin E
84. Mutarotation of lactose in aqueous solution follows
- First order reaction
 - Second order reaction
 - Zero order reaction
 - None of the above
85. Flow of the solvent in descending TLC is due to
- Capillary action
 - Nature of solute
 - Gravity
 - Capillary action and Gravity
86. “The substances after separation spread into a series of concentric bands” in
- Ascending chromatography
 - Descending chromatography
 - Horizontal chromatography
 - Reverse phase chromatography
87. Gas liquid chromatography is a form of
- Adsorption chromatography
 - Partition chromatography
 - Ion exchange chromatography
 - Affinity chromatography
88. Cooked flavour in *khoa* is due to which compounds?
- Sulphydryl
 - Nitrogenous
 - Ammonical
 - lactones

89. Molecular weight (daltons) of k-Casein
- 21000
 - 25000
 - 23000
 - 19000
90. Indicator of water- in- oil type emulsion is
- Butter
 - Ice cream
 - Milk
 - cream
91. Detection of ammonium salts in milk is done by
- Baudouin test
 - DMAB test
 - Rosalic acid test
 - Nessler's reagent test
92. Common name of C is 9-octadecenoic acid is
- Conjugated acid
 - Linoleic acid
 - oleic acid
 - Elaidic acid
93. Peroxides are
- Stable and highly reactive
 - Stable and exhibit low reactivity
 - Unstable and exhibit low reactivity
 - Unstable and highly reactive
94. In manufacture of chhana _____ acid is most commonly used as a coagulating agent
- Acetic
 - Lactic
 - Citric
 - Malic
95. According to FSSAI the minimum milk fat content in Channa is _____%, (m/m), dry matter basis
- 40
 - 60
 - 30
 - 50
96. The purpose of aging of mix in ice cream manufacture is:
- To denature the whey protein
 - To crystallize lactose
 - To obtain a balance between liquid and crystalline fat
 - To denature the casein

97. α -la helps in the synthesis of
- lactose
 - protein
 - fat
 - vitamin
98. Which one among the followings is the function of potassium sulphate in determination of nitrogen by kjeldhal method?
- Increasing the boiling point of sulphuric acid
 - Act as oxidizing agent
 - Lowering boiling point of sulphuric acid
 - Act as catalyst
99. In milk, mineral matter exists in _____ state
- Soluble
 - Emulsion
 - Colloidal
 - Partly soluble and partly colloidal
100. Under FSSAI regulations maximum moisture content in paneer should be ____
- 30%
 - 40%
 - 70%
 - 60%
101. The best known example for inversion of emulsion is _____.
- Milk \rightarrow Cream
 - Butter \rightarrow Ghee
 - Cream \rightarrow Butter
 - Cream \rightarrow Ghee
102. In HPLC the most common parameter for identification of compound is its _____
- Retention time
 - Relative factor
 - Relative flow
 - Retardation factor
103. The molecular weight of ferrous ammonium sulphate $(\text{NH}_4)_2\text{Fe}(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$ is 392. 21 g of ferrous ammonium sulphate is dissolved in water and final volume is made to 500 ml. Express the concentration of iron on ppm basis. Atomic weight of iron is 56
- 3 ppm
 - 6 ppm
 - 0.6 ppm
 - 60 ppm
104. Leach test is used for the detection of _____ in milk
- Hydrogen peroxide
 - Neutralizer
 - Formaldehyde
 - Boric acid

105. Enzyme _____ is a component of a system used for preservation of raw milk
- Sulphydryl oxidase
 - Lactoperoxidase
 - Lysozyme
 - Xanthine oxidase
106. Fraction of phospholipids used in instant milk powder manufacturing is _____.
- Cephalin
 - Sphingomyelin
 - Cadiolipin
 - Lecithin
107. Ghee, the clarified milk fat, is an example of _____.
- True solution
 - Sol
 - Gel
 - Emulsion
108. The richest source of phospholipids among the following milk products is
- Skim milk
 - Whey
 - Ghee
 - Buttermilk
109. The most constant physical property of milk is _____.
- Specific gravity
 - Freezing point
 - Redox potential
 - Surface tension
110. NPN amounts _____ of total nitrogen content of milk
- 0.2%
 - 5%
 - 0.5%
 - 20%
111. Ratio of β - to α -lactose in solution at equilibrium point after mutarotation is _____.
- 1.86
 - 2.86
 - 2.68
 - 1.68
112. Milk appears white due to the presence of _____.
- Whey proteins
 - Soluble calcium hydrogen phosphate
 - Colloidal calcium caseinate
 - Lactose

113. According to FSSAI Regulations, milk fat content of khoa shall not be less than _____ on dry weight basis of finished product
- 37%
 - 50%
 - 17%
 - 47%
114. Pycnometer is used to determine _____ of milk.
- Density
 - Vapour pressure
 - Osmotic pressure
 - Viscosity
115. Energy value of food can be determined using _____
- Potentiometer
 - Polarimetry
 - Calorimeter
 - Colorimeter
116. Oozing of liquid from gel structure is known as _____.
- Symbiosis
 - Synergy
 - Squeezing
 - Syneresis
117. It is profitable to purchase _____ by weight, instead of volume.
- Buttermilk
 - Whey
 - Cream
 - Skim milk
118. Casein are phosphorylated proteins and the phosphate group is attached to the _____ amino acid of casein
- Threonine
 - Phenylalanine
 - Serine
 - Tryptophan
119. Which of the following milk enzymes cannot be used as indicator of heat treatment around pasteurization temperature
- Alkaline phosphatase
 - Gamma-glutamyl trans peptidase
 - Lacto peroxidase
 - Lipoprotein lipase
120. The chemical formula of lactate is
- $\text{CH}_3 - \text{CO} - \text{COOH}$
 - $\text{CH}_3 - \text{CO} - \text{CO} - \text{COOH}$
 - $\text{CH}_3 - \text{CHOH} - \text{COOH}$
 - $\text{CH}_3 - \text{CO} - \text{CHOH} - \text{COOH}$

1.	A
2.	C
3.	A
4.	D
5.	C
6.	D
7.	C
8.	A
9.	A
10.	C
11.	A
12.	B
13.	D
14.	B
15.	A
16.	B
17.	D
18.	B
19.	C
20.	C
21.	B
22.	C
23.	D
24.	D
25.	A
26.	A
27.	C
28.	D
29.	A
30.	B

31.	D
32.	B
33.	D
34.	A
35.	C
36.	C
37.	B
38.	A
39.	A
40.	B
41.	A
42.	B
43.	C
44.	B
45.	D
46.	C
47.	B
48.	D
49.	D
50.	A
51.	C
52.	B
53.	A
54.	C
55.	A
56.	B
57.	A
58.	D
59.	C
60.	C

61.	D
62.	B
63.	D
64.	C
65.	A
66.	D
67.	C
68.	C
69.	B
70.	A
71.	A
72.	D
73.	A
74.	C
75.	B
76.	A
77.	B
78.	C
79.	B
80.	C
81.	D
82.	A
83.	D
84.	A
85.	D
86.	C
87.	B
88.	A
89.	D
90.	A

91.	D
92.	C
93.	D
94.	C
95.	D
96.	C
97.	A
98.	A
99.	D
100.	C
101.	C
102.	A
103.	B
104.	C
105.	B
106.	D
107.	A
108.	D
109.	B
110.	B
111.	D
112.	C
113.	A
114.	A
115.	C
116.	D
117.	D
118.	C
119.	D
120.	C