3rd FOOD ANALYST EXAMINATION

PAPER – II

Important: Please refer your Admit Card / Roll No. Slip before filling your Name & Roll No. on the Question Booklet and OMR Answer Sheet

Name of the Candidate

Roll No.  F A E 3 __ __ __

Signature of the Candidate

Time: 2 Hours  No. of Questions: 100  Max. Marks: 100

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1. Lactoferrin is an iron binding that is inhibitory to a number of food-borne bacteria.
   (a) Lipoprotein (b) Glycoprotein
   (c) Lactoprotein (d) Dipeptide

2. Milk is deficient in one of the following vitamin
   (a) A (b) B complex
   (c) C (d) D

3. Yellow colour in cow milk is due to
   (a) Xanthophyll (b) Riboflavin
   (c) Carotene (d) Bixin

4. Lactose is composed of D-galactose and D-glucose linked through
   (a) α (5-8) (b) α (1-4)
   (c) β (5-8) (d) β (1-4)

5. The following is not a potent anti-oxidant
   (a) Capsaicin (b) Nondihydroguaretic acid
   (c) Tertiary butyl hydro quinone (d) Casoxin

6. Sorbates and benzoates preservatives are most active at following pH of food system
   (a) 7.0 (b) 9.0
   (c) 4.5 (d) 2.0

7. Incorporation of soy flour to wheat flour would enrich the bread with following constituent
   (a) Lysine (b) Fiber
   (c) Lactose (d) Iron

8. Amongst derivatives of lactose, ___________ is an anomer of lactose.
   (a) Lactobionic acid (b) Lactulose
   (c) Epilactose (d) Lactitol

9. Relation between pH and pOH is expressed as
   (a) pH - pOH = 14 (b) pH - pOH = 7
   (c) pH + pOH = 7 (d) pH + pOH = 14

10. Gluten is very unique food protein present in
    (a) Barley (b) Oat
     (c) Rice (d) Wheat

11. In Kjeldahl method of nitrogen estimation, indicator comprises
    (a) Methyl red + Methylene blue (b) Methyl orange + Bromophenol blue
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12. Enzyme lipase is likely to attack fat globules
    (a) Before homogenization (b) After homogenization
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13. Fat molecules exhibit different crystal forms which is called as
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14. Inhibitory effect of milk peptides on the angiotensin converting enzyme (ACE inhibition) is used for making products for controlling
   (a) Cholesterol  (b) Hypertension
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15. Which of the following is not a natural colour
   (a) Canidene 3 glucoside  (b) Chlorophyll
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16. The principal acid formed on heating of lactose at temperature above 100°C.
   (a) Oxalic acid  (b) Lactic acid
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17. Linoleic and linolenic acid are not synthesized in the mammary gland and have to be supplied in the diet; they are therefore called
   (a) Unsaturated fatty acids  (b) Essential fatty acids
   (c) Polyenoic acids  (d) None of above

18. Retrogradation can lead to............. to expel water from polymer network
   (a) Gelling  (b) Syneresis
   (c) Dextrinization  (d) Annealing

19. The increase in volume, viscosity and translucency of starch granules when they are heated in a liquid is called
   (a) Retrogradation  (b) Dextrinization
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20. Trypsin hydrolyses a peptide bond on the carboxyl side of
   (a) Leucine  (b) Phenylalanine
   (c) Arginine  (d) Proline

21. Dominant sugar present in hemicelluloses is
   (a) Ribose  (b) Ribulose
   (c) Xylose  (d) Xylose

22. Celiac disease is a manifestation of
   (a) Lactose intolerance  (b) Tropical sprue
   (c) Chronic constipation  (d) Gluten intolerance

23. Element that acts as an antioxidant and have synergistic effect with Vitamin E is
   (a) Selenium  (b) Iron
   (c) Copper  (d) Iodine

24. The naturally occurring form of amino acid in proteins
   (a) L-amino acids only  (b) D-amino acids only
   (c) both L and D amino acids  (d) none of these
25. Conversion of Casein to Paracasein requires
   (a) Proteases and Renin   (b) Papain and Renin
   (c) Magnesium ions and Rennin (d) Calcium ions and Rennin

26. Reducing sugars and Non reducing sugars can be differentiated by
   (a) Benedict's test (b) Barfoed's test
   (c) Fehling's test (d) None of the above

27. Deficiency of Vitamin D leads to.......... in children
   (a) Scurvy (b) Rickets
   (c) Osteomalacia (d) Osteoporosis

28. The milk protein casein is
   (a) Nucleoprotein (b) Glycoprotein
   (c) Phosphoprotein (d) Lipoprotein

29. Cyanacobalamine is another name for
   (a) B1 (b) B6
   (c) B12 (d) B2

30. Neutraceutical is a food, food component that has been shown to
   (a) Curative effect on disease (b) Beneficial effect on health beyond basic nutrition
   (c) Preventive effect on diseases (d) Antiaging effect

31. Residues of Aflatoxin M1 would be found in
   (a) Dried fruits and nuts (b) Cereals and grains
   (c) Honey (d) Milk and dairy products

32. Which of the following processes creates free radicals in food which can destroy cell membranes and attack DNA and proteins, thus preventing microorganism growth
   (a) Pasteurization (b) Reduction
   (c) Irradiation (d) Oxidation

33. Maillard reaction products which are mutagenic and carcinogenic in nature and formed during food processing involves
   (a) acid and protein (b) Amino acids and reducing sugars.
   (c) Protein, moisture and heat (d) None of the above

34. The major amount of fatty acid present in coconut oil is
   (a) Oleic acid (b) Lauric acid
   (c) Palmitic acid (d) Myristic acid

35. Residues of Bisphenol A in foods are due to
   (a) migration from packaging made from plastics and epoxy resins (b) Frying of food at high temperature
   (c) Use of organophosphorus pesticides (d) Environmental contamination
36. Sudan dyes are found as an adulterant in
   (a) Hot paprika
   (c) Tea
   (d) Coffee powder

37. Arhar dal is washed with water. The water solution yellow in colour. To the same water solution, a few drops of HCl is added and the solution turns pink in colour. This indicates that the dal is adulterated with
   (a) Metanil yellow
   (c) Chrome yellow
   (b) Turmeric powder
   (d) Amaranth yellow

38. Dioxin is a
   (a) Pesticide
   (c) Adulterant
   (b) Heavy metal
   (d) Environmental contaminant

39. Added sugar in milk is considered as
   (a) adulterant
   (c) additive
   (b) preservative
   (d) None of the above

40. BHA is a
   (a) Antioxidant
   (c) Pesticide
   (b) Flavor enhancer
   (d) Permitted color

41. DON is a
   (a) Natural toxicant
   (c) Permitted flavour
   (b) Mycotoxin
   (d) Heavy metal contaminant

42. Organochlorine pesticide residues can be analyzed by
   (a) ECD
   (c) HPLC
   (b) FPD
   (d) AAS

43. As per FSS Act limit for individual pesticide residue in packaged drinking water is
   (a) 1.0ppm
   (c) 1.0ppb
   (b) 0.1ppm
   (d) 0.1ppb

44. Lathyrism is caused by
   (a) Argemone seeds
   (c) Aflatoxin
   (b) Kesari dhal
   (d) Heavy metals

45. Nitrofurans are
   (a) Permitted colors
   (c) Unpermitted colors
   (b) Permitted antibiotics
   (d) Unpermitted antibiotics

46. Sulfonamides are permitted in
   (a) Marine products
   (c) Oils
   (b) Dairy products
   (d) Spices

47. Urea is added to milk to increase
   (a) Thickness
   (c) Nitrogen content
   (b) Shelf-life
   (d) Brightness
48. (a) Porceau (b) Brillian blue FCF  
    (c) Tartazine (d) Rhodamine  

49. Lead chromat is a common adulterant found in  
(a) Water (b) Soft drinks  
(c) Tumeric (d) Vegetable oils  

50. TBHQ in oils  
(a) Enhances color (b) Retards oxidation  
(c) Enhances flavour (d) All of the above  

51. According to Beer-Lambert law, absorbance does not depend on  
(a) Colour of the solution (b) Solution concentration  
(c) Extinction coefficient of the sample (d) Distance that the light has travelled through the sample  

52. Lead levels in drinking water could be determined by using  
(a) IR (b) HPLC  
(c) GC-MS (d) AAS  

53. Tomatoes contain lycopene ($\lambda_{\text{max}} = 444, 470$ and $502$ nm) and $\beta$-carotene ($\lambda_{\text{max}} = 442$ and $472$ nm). Which technique could be used for the analysis of lycopene and $\beta$-carotene in tomatoes, after suitable sample preparation?  
(a) GC with FID detector (b) HPLC with UV detection  
(c) AAS (d) HPLC with UV-VIS detection  

54. The purpose of flame in Flame Atomic Absorption Spectroscopy is to  
(a) Purify the sample (b) Excite the analyte atoms  
(c) Desolvate and atomize the analyte atoms (d) Ionize the analyte atoms  

55. Which of the following compounds would be the most suitable for making a stock solution of Pb$^{2+}$ ion for calibration purpose in AAS?  
(a) PbCl$_2$ (b) PbSO$_4$  
(c) Pb(NO$_3$)$_2$ (d) PbCO$_3$  

56. Headspace analysis is carried out in order to  
(a) Determine the solvent composition of mobile phase (b) Determine non-volatiles  
(c) Analyse the column contents ahead of the sample (d) Analyse volatile compounds from solid or liquid sample  

57. Resolution is proportional to the  
(a) Number of theoretical plates in a column (b) Cube root of the number of theoretical plates in a column  
(c) Square root of the number of theoretical plates in a column (d) Square of the number of theoretical plates in a column
58. Thin Layer Chromatography is
   (a) Partition Chromatography  (b) Electrical mobility of ionic species
   (c) Adsorption chromatography (d) None of the above

59. HPLC methods include
   (a) Liquid/liquid (partition)  (b) Liquid/solid (adsorption)
       chromatography
   (c) Ion exchange and size exclusion  (d) All of the above
       chromatography

60. Which of the following statements is true for a refractive index detector in HPLC?
   (a) It is more sensitive than a UV detector
   (b) It can only be used for isocratic elutions
   (c) It does not respond to many solutes.  (d) None of above

61. A strong signal at 1700 cm⁻¹ in an IR spectrum indicate the presence of a(n)
   (a) Alcohol  (b) Ether
   (c) Carboxyl  (d) Amine

62. A mass spectrometer is often linked to a gas chromatograph (GC) so that the
   (a) Substance can be separated in mass spectrometer and then passed through
       the GC for analysis
   (b) Substance can be separated in the GC and then passed through the
       mass spectrometer for analysis
   (c) Gas used as the mobile phase in the GC is first purified by the mass
       spectrometer
   (d) Exact mass of the mixture is determined by mass spectrometer before it is passed into GC

63. High performance liquid chromatography cannot be used to
   (a) Determine the caffeine content of coffee sample
   (b) Determine mercury content of a fish sample
   (c) Identify various pigments from a leaf extract  (d) None of the above

64. A milk sample was found to contain 0.01% by weight of a toxic residue. In other words
   content of toxic residue in milk is
   (a) 100 ppm  (b) 100 ppb
   (c) 10 ng/kg  (d) 100 ppt

65. Heavy metals can be analysed by
   (a) Gas chromatograph  (b) HPLC
   (c) pH meter  (d) Atomic absorption spectroscopy

66. To calculate relative standard deviation
   (a) only standard deviation value is required
   (b) only mean value is required
   (c) both mean and standard deviation values are required  (d) both mean and standard deviation values are NOT required

67. 0.1 N NaOH solution is a
   (a) primary standard solution  (b) secondary standard solution
   (c) stock solution  (d) none of the above
68. Total ash content provides information on
   (a) salt content  (b) mineral content
   (c) siliceous matter (d) all of the above

69. Absorbed wavelengths in atomic absorption spectrum appear as
   (a) dark background  (b) dark lines
   (c) light background  (d) light lines

70. S/N ratio corresponds to
   (a) sensitivity of the instrument  (b) repeatability of the instrument
   (c) accuracy of the instrument   (d) none of the above

71. Which of the following acid will have higher bacteriostatic effect at a given pH?
   (a) Acetic acid  (b) Tartaric acid
   (c) Citric acid  (d) Maleic acid

72. A psychrophillic halophile would be a microbe that prefers
   (a) Cold temperatures and increased amounts of salt
   (b) Warm temperatures and increased amounts of pressure
   (c) Cold temperatures and the absence of oxygen
   (d) Warm temperatures and increased amounts of acid

73. Which of the following species of Clostridium is responsible for formation of dark green to black colours in cheese?
   (a) Clostridium tyrobutyricum   (b) Clostridium sporogenes
   (c) Clostridium herbarum         (d) None of these

74. Pseudomonas nigrifaciens in mildly salted butter may cause
   (a) Black smudge  (b) Greenish areas
   (c) Pink colour   (d) None of these

75. Yeast are most likely to grow in frozen fruits during
   (a) Slow thawing  (b) refrigeration
   (c) Ambient temperature  (d) None of these

76. Bacterial soft rot is caused due to
   (a) Fermentation of pectin  (b) Fermentation of sugar
   (c) Formation of ketones  (d) Formation of amino acids

77. Lactic acid bacteria in meats may be responsible for
   (a) Slime formation at the surface or within especially in presence of sucrose
   (b) Production of green discoloration of meats
   (c) souring  (d) All of the above

78. Which of the following statements are true regarding botulinual toxins
   (a) a neurotoxin  (b) Water soluble exotoxin
   (c) Produced by Clostridium botulinum, a gram positive aerobic bacteria  (d) All of these
79. Suspected colonies of *Staphylococcus aureus* when grown on Baird Parker medium shall show
(a) Coagulase activity  (b) Protease activity
(c) Catalase activity  (d) None of these

80. Which of the following is true about ISO 2002 method for Salmonella detection
(a) Selenite cystine broth is replaced by Muller Kauffman tetraphionate novobiocin broth  
(b) Rappaport vassiliadis broth has been replaced by Rappaport Vassiliadis Soya broth
(c) XLD is the first isolation medium rather than BGA  
(d) All of these

81. Bacterial flagella is made up of
(a) microtubules  (b) tubulin
(c) flagellin  (d) spinin

82. Yeast and mold count determination requires
(a) Nutrient agar  (b) Acidified potato glucose agar
(c) MacConkey agar  (d) Violet Red Bile Agar

83. Fluid mosaic model is used to explain the cell structure of
(a) Yeast  (b) Mold
(c) Bacteria  (d) Virus

84. Ropiness in bread is due to
(a) *Bacillus cereus*  (b) *Bacillus licheniformis*
(c) *Geotrichum auranticum*  (d) *Bacillus subtilis*

85. *Rhizopus stolonifer* is also known as
(a) Dairy mold  (b) Meat mold
(c) Bread mold  (d) Machi

86. Choose the correct statement
(a) Growth of aerobes takes place at a lower water activity in the presence of air  
(b) Growth of aerobes takes place at a higher water activity in the presence of air
(c) Growth of anaerobes takes place at a lower water activity in the presence of air  
(d) Growth of both aerobes and anaerobes takes place at a higher water activity in the presence of air

87. Thermal death times of *Salmonella typhi* at 60°C is _______ minutes
(a) 3.4  (b) 4.3
(c) 2.3  (d) 3.2

88. Most food and microbial enzymes are destroyed at _______ °C
(a) 62.5  (b) 65.2
(c) 74.9  (d) 79.4
89. Choose the correct statement
   (a) High freezing temperatures are more lethal like more microorganisms are inactivated at -4 to -10°C than at -15 to -30°C
   (b) High freezing temperatures are more lethal like more microorganisms are inactivated at -15 to -30°C than at -4 to -10°C
   (c) Low freezing temperatures are more lethal like more microorganisms are inactivated at -4 to -10°C than at -15 to -30°C
   (d) High freezing temperatures are more lethal like more microorganisms are inactivated at -15 to -30°C than at -4 to -10°C

90. The pH at which sodium benzoate is most effective to inhibit the growth of most bacteria
   (a) 2.5 - 4.0
   (b) 4.5 - 5.5
   (c) 6.5
   (d) 7.0

91. The approximate acidity developed in sauerkraut is
   (a) 1.2% Lactic acid
   (b) 1.2% Acetic acid
   (c) 1.7% Lactic acid
   (d) 1.7% Acetic acid

92. **Neurospora sitophila** is also known as
   (a) Dairy Mold
   (b) Machinery Mold
   (c) Red Bread Mold
   (d) Red meat Mold

93. __________ is a osmophilic yeast
   (a) *S. cerevisiae* var. *ellipsoideus*
   (b) *S. uvarum*
   (c) *Kluyveromyces marxianus*
   (d) *S. rouxii*

94. __________ test organism for penicillin detection in milk
   (a) *B. sterothermophilus* (ATCC 7953)
   (b) *B. pumilus* (ATCC 27142)
   (c) *B. subtilis* (ATCC 6633)
   (d) *B. subtilis var niger* (ATCC 9372)

95. Asepsis is
   (a) Keeping out microorganisms
   (b) Removal of microorganisms
   (c) Hindring the growth of microorganisms
   (d) Killing the microorganisms

96. The rate during which the rate of multiplication is decreasing is also known as
   (a) Maximum stationary phase
   (b) Accelerated death phase
   (c) Negative acceleration phase
   (d) Survival phase

97. Yellow discoloration in meat are caused by bacteria with yellow pigments usually species of
   (a) *Micrococcus*
   (b) *Flavobacterium*
   (c) Both (a) and (b)
   (d) *Pseudomonas synchyanea*

98. Which organization is used as indicator of fecal pollution in water
   (a) *Clostridium*
   (b) *E. coli*
   (c) *Bacillus subtilis*
   (d) *Salmonella*
99. The acidity of medium acid foods lies in between
   (a) Above 6.5                     (b) 6.5 to 5.3
   (c) 5.3 to 4.5                     (d) Below 4.5

100. Laminar air flow bench contain
   (a) Cellulose filter              (b) Nitrocellulose filter
   (c) MEGA Filter                   (d) HEPA Filter
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19. Amongst derivatives of lactose, ......... is an anomer of lactose.
   (a) Lactobionic acid (b) Lactulose
   (c) Epilactose (d) Lactitol

20. Gluten is very unique food protein present in
   (a) Barley  (b) Oat
   (c) Rice    (d) Wheat

21. Enzyme lipase is likely to attack fat globules
   (a) Before homogenization (b) After homogenization
   (c) Before cream separation (d) After pasteurization

22. Inhibitory effect of milk peptides on the angiotensin converting enzyme (ACE inhibition) is used for making products for controlling
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   (c) Chronic constipation (d) Gluten intolerance
27. The naturally occurring form of amino acid in proteins
   (a) L-amino acids only (b) D-amino acids only
   (c) both L and D amino acids (d) none of these
28. Reducing sugars and Non reducing sugars can be differentiated by
   (a) Benedict's test   (b) Barfoed's test
   (c) Fehling's test    (d) None of the above
29. The milk protein casein is
   (a) Nucleoprotein     (b) Glycoprotein
   (c) Phosphoprotein    (d) Lipoprotein
30. Neutraceutical is a food, food component that has been shown to
   (a) Curative effect on disease (b) Beneficial effect on health beyond basic nutrition
   (c) Preventive effect on diseases (d) Antiaging effect
31. Residues of Aflatoxin M1 would be found in
   (a) Dried fruits and nuts (b) Cereals and grains
   (c) Honey               (d) Milk and dairy products
32. Maillard reaction products which are mutagenic and carcinogenic in nature and formed during food processing involves
   (a) acid and protein    (b) Amino acids and reducing sugars.
   (c) Protein, moisture and heat (d) None of the above
33. Residues of Bisphenol A in foods are due to
   (a) migration from packaging made from plastics and epoxy resins (b) Frying of food at high temperature
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34. Arhar dal is washed with water. The water solution yellow in colour. To the same water solution, a few drops of HCl is added and the solution turns pink in colour. This indicates that the dal is adulterated with
   (a) Metanil yellow   (b) Turmeric powder
   (c) Chrome yellow    (d) Amaranth yellow
35. Added sugar in milk is considered as  
(a) adulterant  
(c) additive  
(b) preservative  
(d) None of the above

36. DON is a  
(a) Natural toxicant  
(c) Permitted flavour  
(b) Mycotoxin  
(d) Heavy metal contaminant

37. As per FSS Act limit for individual pesticide residue in packaged drinking water is  
(a) 1.0ppm  
(c) 1.0ppb  
(b) 0.1ppm  
(d) 0.1ppb

38. Nitrofurans are  
(a) Permitted colors  
(c) Unpermitted colors  
(b) Permitted antibiotics  
(d) Unpermitted antibiotics

39. Urea is added to milk to increase  
(a) Thickness  
(c) Nitrogen content  
(b) Shelf-life  
(d) Brightness

40. Lead chromate is a common adulterant found in  
(a) Water  
(c) Turmeric  
(b) Soft drinks  
(d) Vegetable oils

41. Which of the following processes creates free radicals in food which can destroy cell membranes and attack DNA and proteins, thus preventing microorganism growth  
(a) Pasteurization  
(c) Irradiation  
(b) Reduction  
(d) Oxidation

42. The major amount of fatty acid present in coconut oil is  
(a) Oleic acid  
(c) Palmitic acid  
(b) Lauric acid  
(d) Myristic acid

43. Sudan dyes are found as an adulterant in  
(a) Hot paprika  
(c) Tea  
(b) Coriander powder  
(d) Coffee powder

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45. BHA is a  
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   (a) Argemone seeds        (b) Kesari dhal
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   (a) Marine products     (b) Dairy products
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49. ________ is a unpermitted color
   (a) Ponceau           (b) Brilliant blue FCF
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   (a) Enhances color      (b) Retards oxidation
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52. Tomatoes contain lycopene ($\lambda_{max} = 444, 470$ and $502$ nm) and $\beta$-carotene ($\lambda_{max} = 442$ and $472$ nm). Which technique could be used for the analysis of lycopene and $\beta$-carotene in tomatoes, after suitable sample preparation?
   (a) GC with FID detector       (b) HPLC with UV detection
   (c) AAS                        (d) HPLC with UV-VIS detection

53. Which of the following compounds would be the most suitable for making a stock solution of Pb$^{2+}$ ion for calibration purpose in AAS?
   (a) PbCl$_2$    (b) PbSO$_4$
   (c) Pb(NO$_3$)$_2$ (d) PbCO$_3$

54. Resolution is proportional to the
   (a) Number of theoretical plates in a column (b) Cube root of the number of theoretical plates in a column
   (c) Square root of the number of theoretical plates in a column (d) Square of the number of theoretical plates in a column

55. HPLC methods include
   (a) Liquid/liquid (partition) chromatography (b) Liquid/solid (adsorption)
   (c) Ion exchange and size exclusion chromatography (d) All of the above

56. A strong signal at $1700$ cm$^{-1}$ in an IR spectrum indicate the presence of ______
   (a) Alcohol            (b) Ether
   (c) Carbonyl           (d) Amine
57. High performance liquid chromatography cannot be used to
(a) Determine the caffeine content of coffee sample
(b) Determine mercury content of a fish sample
(c) Identify various pigments from a leaf extract
(d) None of the above

58. Heavy metals can be analysed by
(a) Gas chromatograph
(b) HPLC
(c) pH meter
(d) Atomic absorption spectroscopy

59. 0.1 N NaOH solution is a
(a) primary standard solution
(b) secondary standard solution
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60. Absorbed wavelengths in atomic absorption spectrum appear as
(a) dark background
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61. Lead levels in drinking water could be determined by using
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62. The purpose of flame in Flame Atomic Absorption Spectroscopy is to
(a) Purify the sample
(b) Excite the analyte atoms
(c) Desolvate and atomize the analyte atoms
(d) Ionize the analyte atoms

63. Headspace analysis is carried out in order to
(a) Determine the solvent composition of mobile phase
(b) Determine non-volatiles
(c) Analyse the column contents ahead of the sample
(d) Analyse volatile compounds from solid or liquid sample

64. Thin Layer Chromatography is
(a) Partition Chromatography
(b) Electrical mobility of ionic species
(c) Adsorption chromatography
(d) None of the above

65. Which of the following statements is true for a refractive index detector in HPLC?
(a) It is more sensitive than a UV detector
(b) It can only be used for isocratic elutions
(c) It does not respond to many solutes.
(d) None of above

66. A mass spectrometer is often linked to a gas chromatograph (GC) so that the
(a) Substance can be separated in mass spectrometer and then passed through the GC for analysis
(b) Substance can be separated in the GC and then passed through the mass spectrometer for analysis
(c) Gas used as the mobile phase in the GC is first purified by the mass spectrometer
(d) Exact mass of the mixture is determined by mass spectrometer before it is passed into GC
67. A milk sample was found to contain 0.01% by weight of a toxic residue. In other words, content of toxic residue in milk is
(a) 100 ppm  (b) 100 ppb
(c) 10 ng/kg  (d) 100 ppt

68. To calculate relative standard deviation
(a) only standard deviation value is required
(b) only mean value is required
(c) both mean and standard deviation values are required
(d) both mean and standard deviation values are NOT required

69. Total ash content provides information on
(a) salt content  (b) mineral content
(c) siliceous matter  (d) all of the above

70. S/N ratio corresponds to
(a) sensitivity of the instrument  (b) repeatability of the instrument
(c) accuracy of the instrument  (d) none of the above

71. Which of the following acid will have higher bacteriostatic effect at a given pH?
(a) Acetic acid  (b) Tartaric acid
(c) Citric acid  (d) Maleic acid

72. Which of the following species of Clostridium is responsible for formation of dark green to black colours in cheese?
(a) *Clostridium tyrobutyricum*  (b) *Clostridium sporogenes*
(c) *Clostridium herbarum*  (d) None of these

73. Yeast are most likely to grow in frozen fruits during
(a) Slow thawing  (b) refrigeration
(c) Ambient temperature  (d) None of these

74. Lactic acid bacteria in meats may be responsible for
(a) Slime formation at the surface or within especially in presence of sucrose
(b) Production of green discoloration
(c) souring  (d) All of the above

75. Suspected colonies of *Staphylococcus aureus* when grown on Baird Parker medium shall show
(a) Coagulase activity  (b) Protease activity
(c) Catalase activity  (d) None of these

76. Bacterial flagella is made up of
(a) microtubules  (b) tubulin
(c) flagellin  (d) spinin

77. Fluid mosaic model is used to explain the cell structure of
(a) Yeast  (b) Mold
(c) Bacteria  (d) Virus
78. *Rhizopus stolonifer* is also known as
(a) Dairy mold (b) Meat mold
(c) Bread mold (d) Machi

79. Thermal death times of *Salmonella typhi* at 60°C is ______ minutes
(a) 3.4 (b) 4.3
(c) 2.3 (d) 3.2

80. Choose the correct statement
(a) High freezing temperatures are more lethal like more microorganisms are inactivated at -4 to -10°C than at -15 to -30°C
(b) High freezing temperatures are more lethal like more microorganisms are inactivated at -15 to -30°C than at -4 to -10°C
(c) Low freezing temperatures are more lethal like more microorganisms are inactivated at -4 to -10°C than at -15 to -30°C
(d) High freezing temperatures are more lethal like more microorganisms are inactivated at -15 to -30°C than at -4 to -10°C

81. The approximate acidity developed in sauerkraut is
(a) 1.2% Lactic acid (b) 1.2% Acetic acid
(c) 1.7% Lactic acid (d) 1.7% Acetic acid

82. _______ is a osmophilic yeast
(a) *S. cerevisiae* var. *ellipsoideus* (b) *S. uvarum*
(c) *Kluiveromyces marxianus* (d) *S. rouxii*

83. Asepsis is
(a) Keeping out microorganisms (b) Removal of microorganisms
(c) Hindring the growth of microorganisms (d) Killing the microorganisms

84. Yellow discoloration in meat are caused by bacteria with yellow pigments usually species of
(a) *Micrococcus* (b) *Flavobacterium*
(c) Both (a) and (b) (d) *Pseudomonas syringae*

85. The acidity of medium acid foods lies in between
(a) Above 6.5 (b) 6.5 to 5.3
(c) 5.3 to 4.5 (d) Below 4.5

86. A psychrophillic halophile would be a microbe that prefers
(a) Cold temperatures and increased amounts of salt (b) Warm temperatures and increased amounts of pressure
(c) Cold temperatures and the absence of oxygen (d) Warm temperatures and increased amounts of acid

87. *Pseudomonas nigrifaciens* in mildly salted butter may cause
(a) Black smudge (b) Greenish areas
(c) Pink colour (d) None of these
88. Bacterial soft rot is caused due to
(a) Fermentation of pectin         (b) Fermentation of sugar
(c) Formation of ketones          (d) Formation of amino acids

89. Which of the following statements are true regarding botulinal toxins
(a) a neurotoxin                   (b) Water soluble exotoxin
(c) Produced by *Clostridium botulinum*, a gram positive anaerobic bacteria (d) All of these

90. Which of the following is true about ISO 2002 method for Salmonella detection
(a) Selecite cystine broth is replaced by Muller Kauffman tetrathionate novobiocin broth (b) Rappaport vasiliadis broth has been replaced by Rappaport Vasiliadis Soya broth
(c) XLD is the first isolation medium rather than BGA (d) All of these

91. Yeast and mold count determination requires
(a) Nutrient agar                  (b) Acidified potato glucose agar
(c) MacConkey agar                (d) Violet Red Bile Agar

92. Ropiness in bread is due to
(a) *Bacillus cereus*              (b) *Bacillus licheniformis*
(c) *Geotrichum auranticum*        (d) *Bacillus subtilis*

93. Choose the correct statement
(a) Growth of aerobes takes place at a lower water activity in the presence of air (b) Growth of aerobes takes place at a higher water activity in the presence of air
(c) Growth of anaerobes takes place at a lower water activity in the presence of air (d) Growth of both aerobes and anaerobes takes place at a higher water activity in the presence of air

94. Most food and microbial enzymes are destroyed at __________ °C
(a) 62.5                          (b) 65.2
(c) 74.9                          (d) 79.4

95. The pH at which sodium benzoate is most effective __________ to inhibit the growth of most bacteria
(a) 2.5 - 4.0                     (b) 4.5 - 5.5
(c) 5.5                           (d) 7.0

96. *Neurospora sitophila* is also known as
(a) Dairy Mold                    (b) Machinery Mold
(c) Red Bread Mold                (d) Red meat Mold

97. __________ test organism for penicillin detection in milk
(a) *B. sterothermalphilus* (ATCC 7953) (b) *B. pumilus* (ATCC 27142)
(c) *B. subtilis* (ATCC 6633) (d) *B. subtilis var niger* (ATCC 9372)
98. The rate during which the rate of multiplication is decreasing is also known as
   (a) Maximum stationary phase  (b) Accelerated death phase
   (c) Negative acceleration phase (d) Survival phase

99. Which organism is used as indicator of fecal pollution in water?
   (a) *Clostridium*  (b) *E. coli*
   (c) *Bacillus subtilis*  (d) *Salmonella*

100. Laminar air flow bench contain
    (a) Cellulose filter  (b) Nitrocellulose filter
    (c) MEGA Filter  (d) HEPA Filter
ROUGH WORK
ROUGH WORK
3rd FOOD ANALYST EXAMINATION
PAPER – II

Important: Please refer your Admit Card / Roll No. Slip before filling your Name & Roll No. on the Question Booklet and OMR Answer Sheet

Name of the Candidate

Roll No. F A E 3

Signature of the Candidate

Time : 2 Hours No. of Questions : 100 Max. Marks : 100

INSTRUCTIONS:

1. Write your Name and Roll No. on the Question Booklet and also on the OMR Answer Sheet in the space provided and nowhere else and darken the corresponding bubbles with Black Ball Pen in OMR Answer Sheets. Also put your signature on OMR Answer Sheet in the space provided therein.

2. Write candidate’s status (fresh/reappearing) in the OMR Answer Sheet

3. While writing your name leave one blank box between first, second and surname in the same order as mentioned in your admit card.

4. Do not make any identification mark on the OMR Answer Sheet or Question Booklet.

5. Each question has four alternative answers (a, b, c, d) of which only one is correct. For each question darken only one bubble, which ever you think is the correct answer, on the OMR Answer Sheet.

6. There is negative marking for wrong answers. For every correct answer one mark shall be awarded and for every wrong answer 0.25 marks shall be deducted.

7. If you do not want to answer a question, leave all the bubbles corresponding to that question blank in the OMR Answer Sheet. No marks will be deducted in such cases.

8. For rough work, only blank sheet attached at the end of the Question Booklet be used.

9. The Answer Sheet is designed for computer evaluation. Therefore, if you do not follow the instructions given therein, it may make evaluation by the computer difficult. Any resultant loss to the candidate on the above account, i.e. not following the instructions completely, shall be the responsibility of the candidate only.

10. Hand over the OMR Answer Sheet to the Room Invigilator on duty before leaving the Exam Hall.

11. In no case the OMR Answer Sheet is to be taken out of the examination hall. Any candidate found doing so would be expelled from the examination.

12. A candidate who creates disturbance of any kind or changes his/her seat or is found in possession of any material having possibility of any assistance or found giving or receiving assistance or found using any other unfair means during the examination will be expelled from the examination by the Centre Superintendent whose decision shall be final.

13. Telecommunication equipment such as pager, cellular phone, wireless, scanner etc. is not permitted inside the examination hall.
1. In Kjeldahl method of nitrogen estimation, indicator comprises
   (a) Methyl red + Methylene blue   (b) Methyl orange + Bromphenol blue
   (c) Methyl orange + Methylene blue   (d) Methyl red + Bromphenol blue

2. Enzyme lipase is likely to attack fat globules
   (a) Before homogenization   (b) After homogenization
   (c) Before cream separation   (d) After pasteurization

3. Fat molecules exhibit different crystal forms which is called as
   (a) Pleomorphism   (b) Polymorphism
   (c) Polymers   (d) Stereoisomer

4. Inhibitory effect of milk peptides on the angiotensin converting enzyme (ACE inhibition) is used for making products for controlling
   (a) Cholesterol   (b) Hypertension
   (c) Immune functions   (d) Osteoporosis

5. Which of the following is not a natural colour
   (a) Canidine 3 glucoside   (b) Chlorophyll
   (c) Sunset yellow   (d) Annato

6. The principal acid formed on heating of lactose at temperature above 100°C.
   (a) Oxalic acid   (b) Lactic acid
   (c) Lactobionic acid   (d) Formic acid

7. Linoleic and linolenic acid are not synthesized in the mammary gland and have to be supplied in the diet; they are therefore called
   (a) Unsaturated fatty acids   (b) Essential fatty acids
   (c) Polynoic acids   (d) None of above

8. Retrogradation can lead to.............. to expel water from polymer network
   (a) Gelling   (b) Syneresis
   (c) Dextrinization   (d) Annealing

9. The increase in volume, viscosity and translucency of starch granules when they are heated in a liquid is called
   (a) Retrogradation   (b) Dextrinization
   (c) Inversion   (d) Gelatinization

10. Trypsin hydrolyses a peptide bond on the carboxyl side of
    (a) Leucine   (b) Phenylalanine
    (c) Arginine   (d) Proline

11. Dominant sugar present in hemicelluloses is
    (a) Ribose   (b) Ribulose
    (c) Xylulose   (d) Xylose
12. Celiac disease is a manifestation of
   (a) Lactose intolerance (b) Tropical sprue
   (c) Chronic constipation (d) Gluten intolerance
13. Element that acts as an antioxidant and have synergistic effect with Vitamin E is
   (a) Selenium (b) Iron
   (c) Copper (d) Iodine
14. The naturally occurring form of amino acids in proteins
   (a) L-amino acids only (b) D-amino acids only
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15. Conversion of Casein to Paracasein requires
   (a) Proteases and Renin (b) Papain and Renin
   (c) Magnesium ions and Rennin (d) Calcium ions and Rennin
16. Reducing sugars and Non reducing sugars can be differentiated by
   (a) Benedicts test (b) Barfoed's test
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17. Deficiency of Vitamin D leads to........... in children
   (a) Scurvy (b) Rickets
   (c) Osteomalacia (d) Osteoporosis
18. The milk protein casein is
   (a) Nucleoprotein (b) Glycoprotein
   (c) Phosphoprotein (d) Lipoprotein
19. Cyanacobalamine is another name for
   (a) B1 (b) B6
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20. Neutraceutical is a food, food component that has been shown to
   (a) Curative effect on disease (b) Beneficial effect on health beyond basic nutrition
   (c) Preventive effect on diseases (d) Antiaging effect
21. Lactoferrin is an iron binding __________ that is inhibitory to a number of food-borne bacteria.
   (a) Lipoprotein (b) Glycoprotein
   (c) Lactoprotein (d) Dipeptide
22. Milk is deficient in one of the following vitamin
   (a) A (b) B complex
   (c) C (d) D
23. Yellow colour in cow milk is due to
   (a) Xanthophyll (b) Riboflavin
   (c) Carotene (d) Bixin
24. Lactose is composed of D-galactose and D-glucose linked through
   (a) $\alpha$ (5-8)  (b) $\alpha$ (1-4)
   (c) $\beta$ (5-8)  (d) $\beta$ (1-4)

25. The following is not a potent anti-oxidant
   (a) Capsaicin      (b) Nordihydroguaretic acid
   (c) Tertiary butyl hydro quinone (d) Casoxin

26. Sorbates and benzoates preservatives are most active at following pH of food system
   (a) 7.0           (b) 9.0
   (c) 4.5           (d) 2.0

27. Incorporation of soy flour to wheat flour would enrich the bread with following constituent
   (a) Lysine     (b) Fiber
   (c) Lactose   (d) Iron

28. Amongst derivatives of lactose, ___________ is an anomer of lactose.
   (a) Lactobinic acid  (b) Lactulose
   (c) Epilactose    (d) Lactitol

29. Relation between pH and pOH is expressed as
   (a) pH - pOH = 14   (b) pH - pOH = 7
   (c) pH + pOH = 7   (d) pH + pOH = 14

30. Gluten is very unique food protein present in
   (a) Barley    (b) Oat
   (c) Rice     (d) Wheat

31. DON is a
   (a) Natural toxicant (b) Mycotoxin
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65. Which of the following compounds would be the most suitable for making a stock solution of Pb$^{2+}$ ion for calibration purpose in AAS?
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   (c) Pb(NO$_3$)$_2$             (d) PbCO$_3$

66. Headspace analysis is carried out in order to
   (a) Determine the solvent composition of mobile phase
   (b) Determine non-volatiles
   (c) Analyse the column contents ahead of the sample
   (d) Analyse volatile compounds from solid or liquid sample

67. Resolution is proportional to the
   (a) Number of theoretical plates in a column
   (b) Cube root of the number of theoretical plates in a column
   (c) Square root of the number of theoretical plates in a column
   (d) Square of the number of theoretical plates in a column
68. Thin Layer Chromatography is
   (a) Partition Chromatography (b) Electrical mobility of ionic species
   (c) Adsorption chromatography (d) None of the above

69. HPLC methods include
   (a) Liquid/liquid (partition) (b) Liquid/solid (adsorption)
       chromatography (c) Ion exchange and size exclusion (d) All of the above
       chromatography

70. Which of the following statements is true for a refractive index detector in HPLC?
   (a) It is more sensitive than a UV (b) It can only be used for isocratic
       detector (c) It does not respond to many solutes. (d) None of above

71. Bacterial flagella is made up of
   (a) microtubules (b) tubulin
   (c) flagellin (d) spinin

72. Yeast and mold count determination requires
   (a) Nutrient agar (b) Acidified potato glucose agar
   (c) MacConkey agar (d) Violet Red Bile Agar

73. Fluid mosaic model is used to explain the cell structure of
   (a) Yeast (b) Mold
   (c) Bacteria (d) Virus

74. Ropiness in bread is due to
   (a) Bacillus cereus (b) Bacillus lichenformis
   (c) Geotrichum aurantica (d) Bacillus subtilis

75. Rhizopus stolonifer is also known as
   (a) Dairy mold (b) Meat mold
   (c) Bread mold (d) Machi

76. Choose the correct statement
   (a) Growth of aerobes takes place at a lower water activity in the presence of air
   (b) Growth of aerobes takes place at a higher water activity in the presence of air
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77. Thermal death times of Salmonella typhi at 60°C is __________ minutes
   (a) 3.4 (b) 4.3
   (c) 2.3 (d) 3.2

78. Most food and microbial enzymes are destroyed at __________ °C
   (a) 62.5 (b) 65.2
   (c) 74.9 (d) 79.4
79. Choose the correct statement
(a) High freezing temperatures are more lethal like more microorganisms are inactivated at -4 to -10°C than at -15 to -30°C
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80. The pH at which sodium benzoate is most effective to inhibit the growth of most bacteria
(a) 2.5 - 4.0
(b) 4.5 - 5.5
(c) 6.5
(d) 7.0

81. The approximate acidity developed in sauerkraut is
(a) 1.2% Lactic acid
(b) 1.2% Acetic acid
(c) 1.7% Lactic acid
(d) 1.7% Acetic acid

82. Neurospora sitophila is also known as
(a) Dairy Mold
(b) Machinery Mold
(c) Red Bread Mold
(d) Red meat Mold

83. ___________ is a osmophilic yeast
(a) S. cerevisiae var. ellipsoides
(b) S. uvarum
(c) Kluyveromyces marxianus
(d) S. rouxii

84. ___________ test organism for penicillin detection in milk
(a) B. sterothermophilus (ATCC 7953)
(b) B. pumilus (ATCC 27142)
(c) B. subtilis (ATCC 6633)
(d) B. subtilis var. niger (ATCC 9372)

85. Asepsis is
(a) Keeping out microorganisms
(b) Removal of microorganisms
(c) Hindering the growth of microorganisms
(d) Killing the microorganisms

86. The rate during which the rate of multiplication is decreasing is also known as
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(b) Accelerated death phase
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87. Yellow discoloration in meat are caused by bacteria with yellow pigments usually species of
(a) Micrococcus
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89. The acidity of medium acid foods lies in between
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92. A psychrophillic halophile would be a microbe that prefers
   (a) Cold temperatures and increased amounts of salt
   (b) Warm temperatures and increased amounts of pressure
   (c) Cold temperatures and the absence of oxygen
   (d) Warm temperatures and increased amounts of acid

93. Which of the following species of Clostridium is responsible for formation of dark green to black colours in cheese?
   (a) Clostridium tyrobutyricum
   (b) Clostridium sporogenes
   (c) Clostridium herbaceum
   (d) None of these

94. Pseudomonas nigrifaciens in mildly salted butter may cause
   (a) Black smudge
   (b) Greenish areas
   (c) Pink colour
   (d) None of these

95. Yeast are most likely to grow in frozen fruits during
   (a) Slow thawing
   (b) refrigeration
   (c) Ambient temperature
   (d) None of these

96. Bacterial soft rot is caused due to
   (a) Fermentation of pectin
   (b) Fermentation of sugar
   (c) Formation of ketones
   (d) Formation of amino acids

97. Lactic acid bacteria in meats may be responsible for
   (a) Slime formation at the surface or within especially in presence of sucrose
   (b) Production of greier discoloration
   (c) souring
   (d) All of the above

98. Which of the following statements are true regarding botulinal toxins
   (a) a neurotoxin
   (b) Water soluble exotoxin
   (c) Produced by Clostridium botulinum, a gram positive anaerobic bacteria
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99. Suspected colonies of Staphylococcus aureus when grown on Baird Parker medium shall show
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100. Which of the following is true about ISO 2002 method for Salmonella detection
     (a) Selenite cystine broth is replaced by Muller Kauffman tetraphionate novobiocin broth
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     (c) XLD is the first isolation medium rather than BGA
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ROUGH WORK
ROUGH WORK
Important: Please refer your Admit Card / Roll No. Slip before filling your Name & Roll No. on the Question Booklet and OMR Answer Sheet

Name of the Candidate

Roll No. F A E 3

Signature of the Candidate

Time: 2 Hours

No. of Questions: 100

Max. Marks: 100

INSTRUCTIONS:

1. Write your Name and Roll No. on the Question Booklet and also on the OMR Answer Sheet in the space provided and nowhere else and darken the corresponding bubbles with Black Ball Pen in OMR Answer Sheets. Also put your signature on OMR Answer Sheet in the space provided therein.

2. Write candidate’s status (fresh/reappearing) in the OMR Answer Sheet

3. While writing your name leave one blank box between first, second and surname in the same order as mentioned in your admit card.

4. Do not make any identification mark on the OMR Answer Sheet or Question Booklet.

5. Each question has four alternative answers (a, b, c, d) of which only one is correct. For each question darken only one bubble, which ever you think is the correct answer, on the OMR Answer Sheet.

6. There is negative marking for wrong answers. For every correct answer one mark shall be awarded and for every wrong answer 0.25 marks shall be deducted.

7. If you do not want to answer a question, leave all the bubbles corresponding to that question blank in the OMR Answer Sheet. No marks will be deducted in such cases.

8. For rough work, only blank sheet attached at the end of the Question Booklet be used.

9. The Answer Sheet is designed for computer evaluation. Therefore, if you do not follow the instructions given therein, it may make evaluation by the computer difficult. Any resultant loss to the candidate on the above account, i.e. not following the instructions completely, shall be the responsibility of the candidate only.

10. Hand over the OMR Answer Sheet to the Room Invigilator on duty before leaving the Exam Hall.

11. In no case the OMR Answer Sheet is to be taken out of the examination hall. Any candidate found doing so would be expelled from the examination.

12. A candidate who creates disturbance of any kind or changes his/her seat or is found in possession of any material having possibility of any assistance or found giving or receiving assistance or found using any other unfair means during the examination will be expelled from the examination by the Centre Superintendent whose decision shall be final.

13. Telecommunication equipment such as pager, cellular phone, wireless, scanner etc. is not permitted inside the examination hall.
1. Sorbates and benzoates preservatives are most active at following pH of food system
   (a) 7.0          (b) 9.0
   (c) 4.5          (d) 2.0

2. Incorporation of soy flour to wheat flour would enrich the bread with following constituent
   (a) Lysine       (b) Fiber
   (c) Lactose      (d) Iron

3. Amongst derivatives of lactose, ____________ is an anomer of lactose.
   (a) Lactobionic acid (b) Lactulose
   (c) Epilactose     (d) Lactitol

4. Relation between pH and pOH is expressed as
   (a) pH - pOH = 14   (b) pH - pOH = 7
   (c) pH + pOH = 7    (d) pH + pOH = 14

5. Gluten is very unique food protein present in
   (a) Barley       (b) Oat
   (c) Rice         (d) Wheat

6. Lactoferrin is an iron binding ____________ that is inhibitory to a number of food-borne bacteria.
   (a) Lipoprotein (b) Glycoprotein
   (c) Lactoprotein (d) Dipeptide

7. Milk is deficient in one of the following vitamin
   (a) A           (b) B complex
   (c) C           (d) D

8. Yellow colour in cow milk is due to
   (a) Xanthophyll  (b) Riboflavin
   (c) Carotene     (d) Bixin

9. Lactose is composed of D-galactose and D-glucose linked through
   (a) α (5-8)   (b) α (1-4)
   (c) β (5-8)   (d) β (1-4)

10. The following is not a potent anti-oxidant
    (a) Capsaicin   (b) Nordihydroguaretic acid
     (c) Tertiary butyl hydro quinone  (d) Casoxin

11. The principal acid formed on heating of lactose at temperature above 100°C.
    (a) Oxalic acid  (b) Lactic acid
     (c) Lactobionic acid (d) Formic acid

12. Linoleic and linolenic acid are not synthesized in the mammary gland and have to be supplied in the diet; they are therefore called
    (a) Unsaturated fatty acids  (b) Essential fatty acids
     (c) Polyenoic acids        (d) None of above
13. Retrogradation can lead to ............... to expel water from polymer network
   (a) Gelling                 (b) Syneresis
   (c) Dextrinization          (d) Annealing
14. The increase in volume, viscosity and translucency of starch granules when they are heated in a liquid is called
   (a) Retrogradation          (b) Dextrinization
   (c) Inversion               (d) Gelatinization
15. Trypsin hydrolyses a peptide bond on the carboxyl side of
   (a) Leucine                 (b) Phenylalanine
   (c) Arginine                (d) Proline
16. In Kjeldahl method of nitrogen estimation, indicator comprises
   (a) Methyl red + Methylene blue (b) Methyl orange + Bromophenol blue
   (c) Methyl orange + Methylene blue (d) Methyl red + Bromophenol blue
17. Enzyme lipase is likely to attack fat globules
   (a) Before homogenization   (b) After homogenization
   (c) Before cream separation (d) After pasteurization
18. Fat molecules exhibit different crystal forms which is called as
   (a) Pleomorphism            (b) Polymorphism
   (c) Polymers                (d) Stereoisomer
19. Inhibitory effect of milk peptides on the angiotensin converting enzyme (ACE inhibition) is used for making products for controlling
   (a) Cholesterol             (b) Hypertension
   (c) Immune functions        (d) Osteoporosis
20. Which of the following is not a natural colour
   (a) Canidine 3 glucoside    (b) Chlorophyll
   (c) Sunset yellow           (d) Annato
21. Reducing sugars and Non reducing sugars can be differentiated by
   (a) Benedict's test         (b) Barfoed's test
   (c) Fehling's test          (d) None of the above
22. Deficiency of Vitamin D leads to ............ in children
   (a) Scurvy                  (b) Rickets
   (c) Osteomalacia            (d) Osteoporosis
23. The milk protein casein is
   (a) Nucleoprotein           (b) Glycoprotein
   (c) Phosphoprotein          (d) Lipoprotein
24. Cyanocobalamin is another name for
   (a) B1                      (b) B6
   (c) B12                     (d) B2
25. Neutraceutical is a food, food component that has been shown to
   (a) Curative effect on disease (b) Beneficial effect on health beyond basic nutrition
   (c) Preventive effect on diseases (d) Antiaging effect
26. Dominant sugar present in hemicelluloses is
   (a) Ribose (b) Ribulose
   (c) Xylulose (d) Xylose
27. Celiac disease is a manifestation of
   (a) Lactose intolerance (b) Tropical sprue
   (c) Chronic constipation (d) Gluten intolerance
28. Element that acts as an antioxidant and have synergistic effect with Vitamin E is
   (a) Selenium (b) Iron
   (c) Copper (d) Iodine
29. The naturally occurring form of amino acid in proteins
   (a) L-amino acids only (b) D-amino acids only
   (c) both L and D amino acids (d) none of these
30. Conversion of Casein to Paracasein requires
   (a) Proteases and Renin (b) Papain and Renin
   (c) Magnesium ions and Rennin (d) Calcium ions and Rennin
31. Sudan dyes are found as an adulterant in
   (a) Hot paprika (b) Coriander powder
   (c) Tea (d) Coffee powder
32. Arhar dal is washed with water. The water solution yellow in colour. To the same water solution, a few drops of HCl is added and the solution turns pink in colour. This indicates that the dal is adulterated with
   (a) Metanil yellow (b) Turmeric powder
   (c) Chrome yellow (d) Amaranth yellow
33. Dioxin is a
   (a) Pesticide (b) Heavy metal
   (c) Adulterant (d) Environmental contaminant
34. Added sugar in milk is considered as
   (a) adulterant (b) preservative
   (c) additive (d) None of the above
35. BHA is a
   (a) Antioxidant (b) Flavor enhancer
   (c) Pesticide (d) Permitted color
36. Residues of Aflatoxin M1 would be found in
   (a) Dried fruits and nuts (b) Cereals and grains
   (c) Honey (d) Milk and dairy products
37. Which of the following processes creates free radicles in food which can destroy cell membranes and attack DNA and proteins, thus preventing microorganism growth
   (a) Pasteurization  (b) Reduction
   (c) Irradiation     (d) Oxidation

38. Maillard reaction products which are mutagenic and carcinogenic in nature and formed during food processing involves
   (a) acid and protein     (b) Amino acids and reducing sugars.
   (c) Protein, moisture and heat  (d) None of the above

39. The major amount of fatty acid present in coconut oil is
   (a) Oleic acid                (b) Lauric acid
   (c) Palmitic acid            (d) Myristic acid

40. Residues of Bisphenol A in foods are due to
   (a) migration from packaging made from plastics and epoxy resins
   (b) Frying of food at high temperature
   (c) Use of organophosphorus pesticides  (d) Environmental contamination

41. Sulfonamides are permitted in
   (a) Marine products          (b) Dairy products
   (c) Oils                     (d) Spices

42. Urea is added to milk to increase
   (a) Thickness                (b) Shelf-life
   (c) Nitrogen content         (d) Brightness

43. __________ is a unpermitted color
   (a) Ponceau                 (b) Brilliant blue FCF
   (c) Tartrazine              (d) Rhodamine

44. Lead chromate is a common adulterant found in
   (a) Water                   (b) Soft drinks
   (c) Turmeric                (d) Vegetable oils

45. TBHQ in oils
   (a) Enhances color           (b) Retards oxidation
   (c) Enhances flavour         (d) All of the above

46. DON is a
   (a) Natural toxicant        (b) Mycotoxin
   (c) Permitted flavour       (d) Heavy metal contaminant

47. Organochlorine pesticide residues can be analyzed by
   (a) ECD                     (b) FPD
   (c) HPLC                   (d) AAS

48. As per FSS Act limit for individual pesticide residue in packaged drinking water is
   (a) 1.0ppm                   (b) 0.1ppm
   (c) 1.0ppb                  (d) 0.1ppb
49. Lathyrisms is caused by
   (a) Argemone seeds  (b) Kesari dhal
   (c) Aflatoxin      (d) Heavy metals

50. Nitrofurans are
   (a) Permitted colors   (b) Permitted antibiotics
   (c) Unpermitted colors (d) Unpermitted antibiotics

51. Headspace analysis is carried out in order to
   (a) Determine the solvent composition of mobile phase
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55. Which of the following statements is true for a refractive index detector in HPLC?
   (a) It is more sensitive than a UV detector
   (b) It can only be used for isocratic elutions
   (c) It does not respond to many solutes.
   (d) None of above

56. According to Beer-Lambert law, absorbance does not depend on
   (a) Colour of the solution
   (b) Solution concentration
   (c) Extinction coefficient of the sample
   (d) Distance that the light has travelled through the sample

57. Lead levels in drinking water could be determined by using
   (a) IR
   (b) HPLC
   (c) GC-MS
   (d) AAS

58. Tomatoes contain lycopene ($\lambda_{\text{max}} = 444, 470$ and $502$ nm) and $\beta$-carotene ($\lambda_{\text{max}} = 442$ and $472$ nm). Which technique could be used for the analysis of lycopene and $\beta$-carotene in tomatoes, after suitable sample preparation?
   (a) GC with FID detector
   (b) HPLC with UV detection
   (c) AAS
   (d) HPLC with UV-VIS detection
59. The purpose of flame in Flame Atomic Absorption Spectroscopy is to
   (a) Purify the sample                        (b) Excite the analyte atoms
   (c) Desolvate and atomize the analyte      (d) Ionize the analyte atoms
       atoms

60. Which of the following compounds would be the most suitable for making a stock solution
    of Pb\textsuperscript{2+} ion for calibration purpose in AAS?
    (a) PbCl\textsubscript{2}                       (b) PbSO\textsubscript{4}
    (c) Pb(NO\textsubscript{3})\textsubscript{2}       (d) PbCO\textsubscript{3}

61. To calculate relative standard deviation
    (a) only standard deviation value is       (b) only mean value is required
         required
    (c) both mean and standard deviation       (d) both mean and standard deviation
         values are required
         values are NOT required

62. 0.1 N NaOH solution is a
    (a) primary standard solution              (b) secondary standard solution
    (c) stock solution                         (d) none of the above

63. Total ash content provides information on
    (a) salt content                           (b) mineral content
    (c) siliceous matter                       (d) all of the above

64. Absorbed wavelengths in atomic absorption spectrum appear as
    (a) dark background                        (b) dark lines
    (c) light background                       (d) light lines

65. S/N ratio corresponds to
    (a) sensitivity of the instrument          (b) repeatability of the instrument
    (c) accuracy of the instrument             (d) none of the above

66. A strong signal at 1700 cm\textsuperscript{-1} in an IR spectrum indicate the presence of a(n)
    (a) Alcohol                               (b) Ether
    (c) Carbonyl                              (d) Amine

67. A mass spectrometer is often linked to a gas chromatograph (GC) so that the
    (a) Substance can be separated in mass     (b) Substance can be separated in the
        spectrometer and then passed through  GC and then passed through the
        the GC for analysis                      mass spectrometer for analysis
    (c) Gas used as the mobile phase in the   (d) Exact mass of the mixture is
gc is first purified by the mass              determined by mass spectrometer before it is passed into GC
        spectrometer

68. High performance liquid chromatography cannot be used to
    (a) Determine the caffeine content of a   (b) Determine mercury content of a fish
        coffee sample                           sample
    (c) Identify various pigments from a leaf (d) None of the above
        extract
69. A milk sample was found to contain 0.01% by weight of a toxic residue. In other words, the content of toxic residue in milk is
   (a) 100 ppm  (b) 100 ppb
   (c) 10 ng/kg  (d) 100 ppt

70. Heavy metals can be analysed by
   (a) Gas chromatograph  (b) HPLC
   (c) pH meter  (d) Atomic absorption spectroscopy

71. Bacterial soft rot is caused due to
   (a) Fermentation of pectin  (b) Fermentation of sugar
   (c) Formation of ketones  (d) Formation of amino acids

72. Lactic acid bacteria in meats may be responsible for
   (a) Slime formation at the surface or within especially in presence of sucrose
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   (a) Selenite cystine broth is replaced by Muller Kauffman tetrahionate novobiocin broth
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(a) Growth of aerobes takes place at a lower water activity in the presence of air
(b) Growth of aerobes takes place at a higher water activity in the presence of air
(c) Growth of anaerobes takes place at a lower water activity in the presence of air
(d) Growth of both aerobes and anaerobes takes place at a higher water activity in the presence of air

82. Thermal death times of *Salmonella typhi* at 60°C is ________ minutes
(a) 3.4  (b) 4.3
(c) 2.3  (d) 3.2

83. Most food and microbial enzymes are destroyed at ________ °C
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(b) High freezing temperatures are more lethal like more microorganisms are inactivated at -15 to -30°C than at -4 to -10°C
(c) Low freezing temperatures are more lethal like more microorganisms are inactivated at -4 to -10°C than at -15 to -30°C
(d) High freezing temperatures are more lethal like more microorganisms are inactivated at -15 to -30°C than at -4 to -10°C

85. The pH at which sodium benzoate is most effective to inhibit the growth of most bacteria
(a) 2.5 - 4.0  (b) 4.5 - 5.5
(c) 6.5  (d) 7.0

86. Bacterial flagella is made up of
(a) microtubules  (b) tubulin
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(a) Nutrient agar  (b) Acidified potato glucose agar
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   (a) Micrococcus           (b) Flavobacterium
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   (c) Bacillus subtilis     (d) Salmonella

94. The acidity of medium acid foods lies in between
   (a) Above 6.5             (b) 6.5 to 5.3
   (c) 5.3 to 4.5             (d) Below 4.5

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96. The approximate acidity developed in sauerkraut is
   (a) 1.2% Lactic acid       (b) 1.2% Acetic acid
   (c) 1.7% Lactic acid       (d) 1.7% Acetic acid

97. Neurospora sitophila is also known as
   (a) Dairy Mold             (b) Machinery Mold
   (c) Red Bread Mold         (d) Red meat Mold

98. __________ is a osmophilic yeast
   (a) S. cerevisiae var. ellipsoideus (b) S. uvarum
   (c) Kluyveromyces marxianus         (d) S. rouxi

99. __________ test organism for penicillin detection in milk
   (a) B. sterothermophilus (ATCC 7953) (b) B. pumilus (ATCC 27142)
   (c) B. subtilis (ATCC 6633)          (d) B. subtilis var niger (ATCC 9372)

100. Asepsis is
    (a) Keeping out microorganisms (b) Removal of microorganisms
    (c) Hindring the growth of     (d) Killing the microorganisms
        microorganisms
ROUGH WORK
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