081/22

Question Booklet Alpha Code

A

A

Question Booklet Sl. No.

Total Number of Questions : 100 **Time : 90 Minutes**

Maximum Marks : 100

INSTRUCTIONS TO CANDIDATES

1. The Question Paper will be given in the form of a Question Booklet. There will be four versions of Question Booklets with Question Booklet Alpha Code viz. **A, B, C** & **D**.
2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the Question Booklet.
3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.
4. If you get a Question Booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator IMMEDIATELY.
5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your Question Booklet is un-numbered, please get it replaced by new Question Booklet with same alpha code.

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6. The Question Booklet will be sealed at the middle of the right margin. Candidate should not open the Question Booklet, until the indication is given to start answering.
7. Immediately after the commencement of the examination, the candidate should check that the Question Booklet supplied to him/her contains all the 100 questions in serial order. The Question Booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.
8. A blank sheet of paper is attached to the Question Booklet. This may be used for rough work.
9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**
10. Each question is provided with four choices **(A), (B), (C)** and **(D)** having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball Point Pen in the OMR Answer Sheet.
11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**
12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.
13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

1. According to Arrhenius concept acid is a substance which dissociate to give _____ ions in solution.
   A) Na^+ B) OH^- C) H^+ D) Cl^-

2. pH of 1.0 M sodium hydroxide solution is
   A) 0 B) 1 C) 14 D) None of these

3. In a thermodynamic process, if no heat enters or leaves the system is called
   A) Isothermal process B) Adiabatic process
   C) Isobaric process D) Isochoric process

4. When alcohol added to water surface tension
   A) Increases B) Decreases
   C) First increases then decreases D) No change

5. 2 g of sodium hydroxide dissolved in 100 mL water, the molarity of the solution is
   A) 0.5 M B) 1 M C) 2 M D) 0.1 M

6. Colligative property of a solution is proportional to
   A) Volume of the solution
   B) Number of solute particles in the solution
   C) Normality of the solution
   D) Mole fraction of the solution

7. In Ag-Cu cell oxidation occurs at
   A) Electrolyte B) Ag electrode
   C) Zn electrode D) Cu electrode

8. Which of the following molecule does not show infrared spectrum ?
   A) HCl B) CO C) H_2 D) CO_2

9. The elastic scattering of photons are called
   A) Raman scattering B) Rayleigh scattering
   C) Newton scattering D) Einstein scattering

10. Which of the following shift lead to increased intensity on absorption of UV visible radiation ?
    A) Hyperchromic shift
    B) Bathochromic shift
    C) Hypsochromic shift
    D) Hypochromic shift

11. Number of ESR hyperfine splitting lines of methyl radical (CH_3) radical is
    A) 1 B) 2 C) 3 D) 4

12. For measuring chemical shift in NMR spectroscopy the chemical compound commonly used as reference is
    A) tetramethyl silane
    B) hydroquinone
    C) benzene
    D) ethanol

13. In which chromatography, stationary phase is held in a narrow tube and the mobile phase is forced through under pressure ?
    A) High pressure liquid chromatography
    B) Column chromatography
    C) Paper chromatography
    D) Thin layer chromatography

14. The first milk produces by cow after calving is called
    A) Colostrum
    B) Carotene
    C) Metalene
    D) Oestrum

15. Specific gravity of milk can be determined by using
    A) Manometer
    B) Hygrometer
    C) Lactometer
    D) Barometer

16. Which of the following cow breed gives maximum yield of milk ?
    A) Zebu
    B) Jersy
    C) Brown Swiss
    D) Holstein-Friesian

17. The vitamin which is deficient in milk is
    A) D B) A C) B D) C

18. The official record of registered animals of a breed kept by the breed association is called
    A) Cattle book
    B) Domestic book
    C) Farm book
    D) Heard book

19. To the water extract of the cattle feed, addition of concentrated sulfuric acid _____ colour indicates the presence of Mahua cake.
    A) black
    B) violet
    C) yellow
    D) white

20. Ammonium molybdate reagent is used for identifying _____ in cattle feed.
    A) manganese
    B) magnesium
    C) calcium
    D) phosphorous

21. The color of milk is a blend of individual effects produced by colloidal casein particles and
    A) methyl red
    B) alizarin
    C) carotene
    D) curcumin

22. Volhard's method is used for detecting _____ content in butter.
    A) sugar
    B) salt
    C) water
    D) acid

23. Example for Newtonian fluid is
    A) milk
    B) suspensions
    C) pastes
    D) emulsion

24. Milk is a rich source of energy, the fat content in cow milk is _____ cal/g.
    A) 2.6 B) 6.5 C) 4.2 D) 9.3

25. Total solid and total SNF in milk determined by _____ method.
    A) Gabriel
    B) Vanthoff
    C) Gerber
    D) Wikinson

26. Which among the following requires sodium ion dependent transport for intestinal absorption ?
    A) Glucose
    B) Fructose
    C) Xylose
    D) Arabinose

27. Identify the protein which has phosphate as its prosthetic group.
    A) Hemoglobin
    B) Casein
    C) Xanthine oxidase
    D) Ferritin

28. Megaloblastic anaemia is caused due to the deficiency of which among the following vitamin ?
    A) Cyanocobalamin
    B) Thiamine
    C) Ascorbic acid
    D) Folic acid

29. Which among the following enzyme is used in cancer therapy ?
    A) Streptokinase
    B) Asparaginase
    C) Trypsin
    D) Alkaline Phosphatase

30. The level of structural organization of protein unaffected by denaturation is
    A) Primary
    B) Secondary
    C) Tertiary
    D) Quaternary

31. Identify the subunits in the heteropolysaccharide Keratin sulphate.
    A) D-glucuronic acid and N-acetyl galactosamine-4-sulphate
    B) D-glucuronic acid and N-acetyl glucosamine
    C) L-iduronic acid and N-acetyl galactosamine-4-sulphate
    D) D-galactose and N-acetyl glucosamine-6-sulphate

32. The positions of double bond in linolenic acid are
    A) 1 and 9
    B) 2, 9 and 12
    C) 9, 12 and 15
    D) 5, 8, 11 and 14

33. Identify the plasma protein responsible for maintaining the osmotic balance in our body.
    A) Haptoglobulin
    B) Albumin
    C) Fibrinogen
    D) Ceruloplasmin

34. Identify the enzyme which catalyses substrate level phosphorylation reaction in TCA cycle.
A) Isocitrate dehydrogenase B) Aconitase
C) Succinate thiokinase D) Fumarase

35. The disease caused due to the deficiency of phytanic acid α-oxidase is
A) SIDS B) Refsum's disease
C) Zellweger syndrome D) Methyl malonyl aciduria

36. Which among the following amino acids *do not* undergo transamination reaction ?
A) Lysine and threonine B) Lysine and aspartate
C) Threonine and glutamate D) Aspartate and glutamate

37. The normal serum calcium concentration is
A) 4.5 – 5.5 mg/dL B) 2.3 – 3.6 mg/dL
C) 9.1 – 11 mg/dL D) 15.2 – 17.5 mg/dL

38. Cyclopentano perhydro phenanthrene nucleus is the basic structural unit in which biomolecule ?
A) Glycolipids B) Phospholipids
C) Cholesterol D) Sphingolipids

39. The mineral oxide content in a food sample can be determined by measuring the
A) Nitrogen content B) Ash content
C) Protein content D) Total solid content

40. Which among the following is the range of the melting point of milk fat ?
A) 18 – 20°C B) 22 – 24°C
C) 28 – 30°C D) 32 – 36°C

41. The antibody which is present in the highest concentration in serum is
A) IgM B) IgD C) IgE D) IgG

42. The groups located on the surface of an antigen molecules which are recognized by the antibody is
A) Isotope B) Epitope
C) Paratope D) Hapten

43. Which among the following radioactive isotope is commonly used in Radioimmunoassay ?
    A) Sulphur-35 B) Phosphorus-32
    C) Iodine-125 D) Nitrogen-14

44. Identify the solvent used for the process of defatting in cold extraction.
    A) Petroleum ether B) Ethyl acetate
    C) Ethanol D) Water

45. Blocking agent is used in western blotting. Identify the purpose.
    A) Blocks the transfer of protein from gel to membrane
    B) Blocks the binding of antibody to the membrane
    C) Blocks the binding of primary and secondary antibody
    D) Blocks non-specific secondary antibody

46. Which among the following technique makes use of immunofluorescence ?
    A) Confocal microscopy B) RIA
    C) ELISA D) Electron microscopy

47. Identify the constituents in the milk protein.
    A) Whey proteins B) Casein
    C) Ferritin D) Both A) and B)

48. The protein content can be measured using which among the following methods ?
    A) Kjeldahl method B) Gerber's method
    C) Rose-Gottlieb's method D) Babcok's method

49. The class of antibody that is expressed on the surface of B-lymphocytes is
    A) IgA B) IgE C) IgG D) IgM

50. Identify the enzyme used in the technique of ELISA.
    A) Horse radish peroxidase B) Tyrosinase
    C) Lactate dehydrogenase D) Chymotrypsin

51. Rocky mountain spotted fever is caused by
    A) Rickettsia rickettsii
    B) Rickettsia prowazekii
    C) Rickettsia typhi
    D) Rickettsia akari

52. Bacterial conjugation was described by
    A) Zinder and Lidenberg
    B) Lederberg and Tatum
    C) Tatum and Zinder
    D) Beadle and Tatum

53. Which of these are basic dyes ?
    A) Methylene blue, Crystal violet
    B) Methylene blue, Rose bengal
    C) Crystal violet, Rose bengal
    D) Methylene blue, Eosin

54. Mesosomes are present in
    A) Only gram negative
    B) Only gram positive
    C) Both gram positive and negative bacteria
    D) None of the above

55. Bacterial membrane contains sterol like molecules called hapnoids. Hapnoids are
    A) Penta cyclic sterols
    B) Tetra cyclic sterols
    C) Heptacyclic sterols
    D) None of these

56. Final blow to spontaneous generation was given by
    A) Louis Pasteur
    B) Robert Koch
    C) John Tyndall
    D) John Needham

57. Fixative osmium tetroxide is used to stabilize
    A) Protein
    B) Nuclear material
    C) Cell structure
    D) Dehydration of cell

58. Diameter of metal grid for specimen mount used in Electron Microscope is
    A) 3.05 mm
    B) 3.50 mm
    C) 3.05 μm
    D) 3.50 μm

59. Medium containing serum or egg are sterilized by
    A) Hot air oven
    B) Autoclave
    C) Inspissator
    D) Incinerator

60. The membrane used in budding of corona viruses are
    A) Endoplasmic reticulum and nucleus
    B) Golgi apparatus and nucleus
    C) Golgi apparatus and Endoplasmic reticulum
    D) Nucleus and plasma membrane

61. Which of the following is most effective in destroying micro-organisms ?
    A) High temperature low moisture
    B) High temperature high moisture
    C) Low temperature high moisture
    D) All of the above

62. Which of the below mentioned condition determines Thermal Death Time (TDT) ?
    A) Temperature is varied and time is fixed
    B) Temperature and time is fixed
    C) Temperature and time is varied
    D) Temperature is fixed and time is varied

63. Which of the algae has structure called Gullet ?
    A) Euglenoids
    B) Golden algae
    C) Blue green algae
    D) Dinoflagellates

64. In modified atmosphere packaging content of carbondioxide commonly used to prevent spoilage of packed food is
    A) Greater than 25%
    B) Less than 30%
    C) Greater than 60%
    D) None of the above

65. Which of the statements is correct regarding algal toxins ?
    A) Commonly found in fish and marine animals
    B) Algal toxins are neurotoxic
    C) Algal toxins are temperature stable
    D) All of the above

66. Ultra high temperature pasteurisation process involves
    A) 78 Ⓡ C for 3 minutes
    B) 141 Ⓡ C for 3 minutes
    C) 141 Ⓡ C for 2 seconds
    D) 141 Ⓡ C for 5 seconds

67. In flat sour spoilage which conditions are observed
    A) No gas formation
    B) Acid formation without gas
    C) Both acid and gas formation
    D) None of the above

68. The intensity of radiation commonly used to sterilize meat products in rad pasteurisation is

A) 4.5 – 5.6 mega rads
B) 4.1 – 5.2 mega rads
C) 3.5 – 4.5 mega rads
D) 4.8 – 5.9 mega rads

69. Method of sterilization used to remove 90% of pathogenic micro-organisms from spices is

A) Autoclave
B) Heating at 80 Ⓡ C
C) Radicidation
D) Ethylene oxide

70. Semisoft blue cheese are produced by

A) Penicillium candidum
B) Penicillium camembertii
C) Penicillium roqueforti
D) Lactobacillus lactis

71. Xerophillic organisms preferred to grow at

A) High aw condition
B) Low aw condition
C) High osmotic concentration
D) All of the above

72. Dairy product of mold lactic fermentation is

A) Kefir
B) Villi
C) Cheese
D) Yogurt

73. Which of the following is reason for rancidity of fat in butter ?

A) Production of short chained fatty acids
B) Production of long chained fatty acids
C) Absence of short chained fatty acids
D) Absence of long chained fatty acids

74. Coumarins is a natural antimicrobial agent found in

A) Buffalo milk
B) Plants and vegetables
C) Cow milk
D) Meat and its products

75. Sandwich ELISA method is used for the detection of

A) Antibody
B) Antigen
C) Conjugated antibody
D) Conjugated antigen

76. Which of the following possess buffering capacity ?
    A) Proteins
    B) Nucleic acids
    C) Lipids
    D) All of the above

77. The number of different possible DNA sequences with 'n' nucleotides is
    A) 4 + n
    B) 16^n
    C) 4^n
    D) n^4

78. Cytosine is
    A) 2-amino-6-oxy pyrimidine
    B) 2, 4-dioxy-5-methyl pyrimidine
    C) 2, 4-dioxy-6-carboxy pyrimidine
    D) 2-oxy-4-amino pyrimidine

79. Which is the least conserved histone ?
    A) H4
    B) H1
    C) H3
    D) H2A & H2B

80. DNA Sequence interacts with σ factor of RNA polymerase is
    A) TTGACA
    B) ACGAGGU
    C) TATAAT
    D) TATAAA

81. Bio pesticides are
    A) Biochemical pesticides
    B) Microbial pesticides
    C) Plant incorporated protectants
    D) All of these

82. Single cell protein is derived from
    A) Bacteria
    B) Fungi
    C) Algae
    D) All of these

83. Therapeutic proteins
    A) Binds non covalently to the target
    B) Affects covalent bonds
    C) Exert no specific interaction
    D) All of these

84. Which enzyme is not used for improving quality of bread in food industry ?
A) Protease
B) β-galactosidase
C) α-amylase
D) Glucoamylase

85. Patent Act Amendment in 2021 refers to
A) Introduction of product patent protection for pharmaceuticals
B) Reduction of fee for patent filing and prosecution for educational institutions
C) Modification of criteria for patenting an invention
D) All of these

86. The following biocontrol agent is commonly used in controlling *Phytophthora* infections in plants
A) Trichoderma
B) Bacillus thuringiensis
C) Parasitoides
D) Baculoviruses

87. GP 293 cell lines are mainly used in the over production of
A) Enzymes and vaccines
B) Antibiotics and vaccines
C) Growth factor
D) All the above

88. Meat tenderization is often enhanced by
A) Papain
B) Bromelain
C) Both A and B
D) A only

89. Which of the following is a chaotropic agent ?
A) Glycerol
B) Guanidine
C) Bromophenol blue
D) Coomassie blue

90. Agarose consists of
A) galactose and 3, 6-anhydrogalactose
B) glucose and 3, 6-anhydrogalactose
C) glucose and 3, 6-anhydroglucose
D) galactose and 3, 6-anhydroglucose

91. Stain used to detect glycoproteins in gel
    A) Silver stain
    B) Ponceau stain
    C) Periodic acid-Schiff stain
    D) Coomassie blue stain

92. Asymmetric PCR differs from regular PCR in
    A) The amount of primer used
    B) DNA polymerase enzyme
    C) Denaturation temperature
    D) Template concentration

93. Which is the highly sensitive technique used for the identification and quantification of pesticide residues ?
    A) Gas chromatography
    B) Liquid chromatography
    C) LC-MS
    D) Column chromatography

94. Recombinant DNA technology was invented by
    A) Boyer, Cohen and Paul Berg
    B) Nathan, Arber and Smith
    C) Watson, Crick and Wilkins
    D) None of these

95. Technique which employ nucleic acid probe for the diagnosis of viral diseases ?
    A) dot blot hybridization
    B) sandwich hybridization
    C) *in situ* hybridization
    D) all of these

96. Regulations and Guidelines for Recombinant DNA Research and Biocontainment came into force in
    A) 2008
    B) 2017
    C) 2016
    D) 2011

97. Which membrane is commonly used in Northern blotting ?
    A) Nitrocellulose
    B) Nylon
    C) Polyvinylidenedifluoride membrane
    D) None of these

98. Which of the following can be used as a vaccine ?
    A) Live attenuated viruses
    B) Inactivated cell culture grown viruses
    C) Recombinant protein
    D) All of these

99. Which one of the following statements is not correct with respect to DNA probes used in microbial identification ?
    i. They cannot be used to identify microorganisms that are not readily cultured or biochemically identified.
    ii. They cannot be used to identify microorganisms that do not possess diagnostic antigens.
    iii. It allows differentiation of pathogenic from avirulent strains.
    iv. Can identify of antibiotic resistance genes.
    A) i and iii is wrong
    B) i and ii is wrong
    C) ii and iv is wrong
    D) iii is wrong

100. First recombinant vaccine was against
    A) Hepatitis B
    B) HIV
    C) Chicken pox
    D) Hepatitis C

Space for Rough Work