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ENTRANCE EXAMINATION FOR ADMISSION, MAY 2010.

M.Sc. (FOOD SCIENCE AND NUTRITION)

COURSE CODE : 389

Register Number : [ ]

Signature of the Invigilator
(with date)

COURSE CODE : 389

Time : 2 Hours Max : 400 Marks

Instructions to Candidates :

1. Write your Register Number within the box provided on the top of this page and fill in the page 1 of the answer sheet using pen.
2. Do not write your name anywhere in this booklet or answer sheet. Violation of this entails disqualification.
3. Read each question carefully and shade the relevant answer (A) or (B) or (C) or (D) in the relevant box of the ANSWER SHEET using HB pencil.
4. Avoid blind guessing. A wrong answer will fetch you –1 mark and the correct answer will fetch 4 marks.
5. Do not write anything in the question paper. Use the white sheets attached at the end for rough works.
6. Do not open the question paper until the start signal is given.
7. Do not attempt to answer after stop signal is given. Any such attempt will disqualify your candidature.
8. On stop signal, keep the question paper and the answer sheet on your table and wait for the invigilator to collect them.
9. Use of Calculators, Tables, etc. are prohibited.

1. The volatile component in coriander is

(A) Linalool (B) Cineole (C) Eugenol (D) Carvacrol

2. Name the enzyme which brings about the fermentation of tea leaves in tea processing

(A) Proteinase (B) Phenylalanine ammonia- lysae

(C) Dehydroshilkimate reductase (D) Polyphenol oxidase

3. Aroma of the tomato is due to

(A) (Z)-3-hexenal (B) (E)-2-nonenal

(C) Linolenic acid (D) 3,6, nonadienal

4. The water soluble, non starch food polysaccharide derived from red algae is

(A) Acetal (B) Hemiacetal

(C) Glycosides (D) Carrageenans

5. The smallest spatial unit of repetition along the chain axis within the unit cell is termed as

(A) Subcell (B) Transtition point

(C) Short spacing (D) Long spacing

6. The viscosity property of when protein is due to

(A) Hydrophobic bonding (B) Water binding

(C) Adsorption (D) Film formation

7. Formation of oxymyoglobin, when molecular oxygen binds to myoglobulin is termed as

(A) Oxidation (B) Oxygenation

(C) Dehydration (D) Dehydrogenation

8. The bitter compound that is present in most foods include

(A) Phenylthiocarbamide (B) Glutamate

(C) Saccharin (D) Procyanidin

9. Polyphosphoric acid is a

(A) Chelating agent
(B) Buffering agent
(C) Acid leavening agent
(D) Base leavening agent

10. The volatile component in cardamom is

(A) Cineole (B) Camphor (C) Carvacrol (D) Camphene

11. The alcoholic beverage made from alcohol and grain distillate by special process is known as

(A) Absinthe (B) Bitters (C) Aquavit (D) Vodka

12. The water soluble, non starch food polysaccharide derived from cellulose is

(A) Carboxymethyl cellulose
(B) Guar gum
(C) Locust gum
(D) Xanthum gum

13. The volume of oil that can be emulsified per gram of protein before phase inversion occurs is known as

(A) Emulsion stability
(B) Emulsion capacity
(C) Emulsion activity index
(D) Emulsion load

14. The volatile compound responsible for flavor in lemon is

(A) Ethanol (B) Octanal (C) Neral (D) Citral

15. The volatile compound responsible for flavor in orange is

(A) Ethanal
(B) Neral
(C) Geranial
(D) Neryl acetate

16. Emulsions stability is expressed as

(A) (Volume of cream level/total volume of emulsion) × 100
(B) (Volume of emulsion/volume of cream level) × 100
(C) (100 × volume of cream level)/volume of emulsion
(D) (100 × volume of emulsion)/volume of cream level

17. The primary ester bonds of triacyglycerol is hydrolyzed by

(A) Pancreatic lipase
(B) Pancreatic hydrolase
(C) Pancreatic oxidase
(D) Pancreatic triacylase

18. The prominent enzyme in honey is

(A) α glucosidase
(B) β glucosidase
(C) Galactase
(D) Glucose reductase

19. The volatile component in clove is

(A) Carvacrol
(B) Eugenol
(C) Cineole
(D) Linalool

20. The stimulating effect in coco is brought by

(A) Pentosans
(B) Theobromine
(C) Catechins
(D) Epigallocatechin

21. The structural group of carotenoids is

(A) Oxygenated xanthophylls
(B) Xanthophylls
(C) α-xanthophylls
(D) β-xanthophylls

22. The hemiactal form of sugar reacts with an alcohol to form

(A) Acetal
(B) Hemiacetal
(C) Glycosides
(D) Carrageenans

23. Carotenoid is a

(A) Simple lipid
(B) Compound lipid
(C) Derived lipid
(D) None of the above

24. The foaming property of egg protein is due to

(A) Hydrophobic bonding
(B) Film formation
(C) Adsorption
(D) Hydrogen bonding

25. Sugar moiety is present in the structure of

(A) chlorophyll (B) myoglobin

(C) haemoglobin (D) anthocyanins

26. Example of a sulfur containing amino acid is

(A) Cysteine (B) Glutamine

(C) Arginine (D) Histidine

27. Example of an amino acid with aromatic ring is

(A) Histidine (B) Arginine

(C) Glutamine (D) Alanine

28. Example of an amino acid with side chain containing basic group is

(A) Arginine (B) Histidine

(C) Proline (D) Cysteine

29. The mechanism by which one or more products are released from the enzymes before all the substrate are added are known as

(A) Sequential reaction (B) Ping pong reaction

(C) Random order reaction (D) Compulsory order reaction

30. Carbohydrates are also described as

(A) Polyhrdric alcohols (B) Polyhydric ketones

(C) Polyhydric aldehydes (D) Both (A) and (B)

31. Example of a polysaccharide is

(A) Verbascose (B) Glucoheptose

(C) Dihydroxyacetone (D) Inulin

32. The test in which sugar solution is boiled with copper acetate and acetic acid is

(A) Nylanders test (B) Osazone formation

(C) Barfoeds test (D) Glucazone formation

33. Example of phospholipid is

(A) Choline
(B) Sphingomylein
(C) Ethanolamine
(D) Glycerides

34. Saponification is also known as

(A) Alkali hydrolysis
(B) Enzyme hydrolysis
(C) Acid hydrolysis
(D) None of the above

35. The test that is used to detect oxidative rancidity is

(A) Frieds test
(B) Kries test
(C) Methyls test
(D) Gallic acid test

36. Lecithinase enzyme found in cobra venom is

(A) Lecithinase D
(B) Lecithinase B
(C) Lecithinase A
(D) Lecithinase C

37. Parital hydrolysis of collagen by steam gives

(A) Gelatin
(B) Protamines
(C) Phosphoprotein
(D) Casein

38. The protein that contain porphyrin as the prosthetic group is termed as

(A) Mettaloprotein
(B) Lipoprotein
(C) Chromoprotein
(D) Mucoprotein

39. In the Embden Meyerhof pathway, conversion of glucose-6-phosphate to fructose-6-phosphate is catalysed be the enzyme

(A) Phosphofructokinase
(B) Phosphoglyceromutase
(C) Phosphoglyceratekinase
(D) Enolase

40. In the Embden Meyerhof pathway, conversion of 3-phosphoglycerate to 2-phospholycerate is catalyzed by the enzyme

(A) Phosphofructokinase
(B) Phosphoglyceromutase
(C) Phosphoglyceratekinase
(D) Enolase

41. In the Embden Meyerhof pathway, conversion of 3-phosphoglycerate to phosphoenol pyruvate is catalysed be the enzyme

(A) Phosphofructokinase
(B) Phosphoglyceromutase
(C) Phosphoglyceratekinase
(D) Enolase

42. In the conversion of glucose-1-phosphate to uridine diphsophate glucose ———— is liberated

(A) Pyrophosphate
(B) Inorganic phosphorus
(C) Organic phosphorus
(D) None of the above

43. The formation of glucose from non- carbohydrate source is known as

(A) Glycogenesis
(B) Gluconeogenesis
(C) Glycogenolysis
(D) Glycolysis

44. Complete oxidation of one molecule of glucose yields

(A) 57000 calories of energy
(B) 600,000 calories of energy
(C) 625,000 calories of energy
(D) 686,000 calories of energy

45. What is the type of reaction involved in the conversion of xylulose-5-phosphate to form glyceradehyde-3-phosphate

(A) Transadolation
(B) Dehydrogenation
(C) Transketolation
(D) Oxidation

46. Which hormone increased the blood glucose levels by increasing glycogenolysis and glycolysis

(A) Epinephrine
(B) Adrenocorticotrophic
(C) Thyroid stimulating hormone
(D) Glucagon

47. In the activation of fatty acid with ATP and CoA to form acyl thioester of CoA in beta oxidation of fatty acid ———— is released

(A) Acetyl CoA
(B) Adenylic acid
(C) Enol-CoA
(D) Hydroxyl CoA

48. Lipositol is derived from

(A) Lecithin
(B) Cephalin
(C) Diglyceride
(D) Phosphatidic acid

49. In the biosynthesis of cholesterol mevalonic acid is phosphorylated to form

(A) Isopentenyl pyrophosphate (B) Farnesyl pyrophosphate

(C) Lanosterol (D) Squalene

50. The hormone that accelerate the catabolism of protein is

(A) Growth hormone (B) Insulin

(C) Adrenocorticotropic (D) Testosterone

51. Which strain provides burn or caramel flavour?

(A) Streptococcus lactis (B) Areomonas hydrophila

(C) Clostridium (D) Putrefaciens

52. One of the important kind of chemical spoilage of canned foods is

(A) Oxygen swell (B) Soft swell

(C) Hard swell (D) Hydrogen swell

53. A method involving a freezing time of 30 minutes or less is

(A) Sharp freezing (B) Slow freezing

(C) Quick freezing (D) Dehydro freezing

54. Plasmids are

(A) Donar DNA

(B) Vectors

(C) Extra - chromosomal circular DNA in some bacteria

(D) Virus

55. Destruction of molds on the surface of bread is done by

(A) Electronic heating (B) Ultraviolet irradiation

(C) Freezing (D) None of the above

56. Citrullinemia occurs due to the deficiency of the enzyme

(A) Carbamoyl-P-synthetase (B) Arginino succinate synthetase

(C) Glutamate dehydrogenase (D) None of the above

57. Maple syrup syndrome is associated with

(A) Leucine
(B) Isoleucine
(C) Valine
(D) All the above

58. Melatonin is formed from

(A) Tyrosine
(B) Histidine
(C) Serine
(D) Tryptophane

59. The disease that occurs due to the deficiency of acid maltase is

(A) Von gierke's disease
(B) Pompe's disease
(C) Forbe's disease
(D) None of these

60. Oils from cereal grains are rich in

(A) Vitamin K
(B) Vitamin D
(C) Vitamin A
(D) Vitamin E

61. Pulses are deficient in

(A) Methionine
(B) Lysine
(C) Leucine
(D) Valine

62. Alanine is similar to serine in the same way that

(A) Val is similar to Thr.
(B) Phe is similar to Tyr
(C) Phe is similar to Trp
(D) Ser is similar to Thr

63. Disulfide bonds most often stabilize the native structure of:

(A) Extracellular proteins
(B) Dimeric proteins
(C) Intracellular proteins
(D) Multisubunit proteins

64. The helices in the a super secondary structure are held together primarily by

(A) Antiparallel, a-helix
(B) Antiparallel, reverse turn
(C) Parallel, a-helix
(D) Parallel, type i turn

65. The quaternary structure of human hemoglobin is best described as a

(A) Dimer of two myoglobin dimmers
(B) Tetramer of identical subunits
(C) Tetramer of four different subunits
(D) Tetramer of two different subunits

66. A favorable charge-charge interaction between R groups in an a-helix is expected to occur when the interacting side chains are separated by

(A) One-two residues
(B) Three-four residues
(C) Five-six residues
(D) Seven-eight residues

67. Maximal hydrogen bonding between an alcohol and water involves H_2O donating ———— and accepting ————.

(A) 2 H-bonds; 1 H-bond
(B) 1 H-bond; 2 H-bonds
(C) 2 H-bonds; 2 H-bonds
(D) 1 H-bond; 1 H-bond

68. Collagen is best described as

(A) An a-helical structural protein
(B) A coiled-coil found in hair
(C) A cross-linked globular protein
(D) A triple-helical fibrous protein

69. The lone pair electrons on oxygen in a H_2O molecule

(A) Carry a partial negative charge
(B) Carry a partial positive charge
(C) Are not important for the properties of water
(D) Make water an apolar solvent

70. The dissociation constant of H_2O at 25°C is

(A) 10^{-7} M (B) 10^{7} M (C) 10^{14} M (D) 10^{-14} M

71. Polyprotic acids such as H_3PO_4, can act as acid-base buffers

(A) Only in combination with polyprotic bases
(B) At ph values around any of their pk_a's
(C) At ph values around neutrality
(D) At ph values halfway between their pk_a's

72. Which pair of amino acids absorbs UV light strongly at 280 nm?

(A) Thr & His
(B) Cys & Asp
(C) Gln & Pro
(D) None of the above

73. The strong conclusion from Anfinsen's work on RNA'ase was that:

(A) Disulfide bonds (S-S) in proteins can be reduced in vitro.
(B) Cys-SH groups are not found in vivo
(C) The native conformation of a protein is adopted spontaneously
(D) Irreversible denaturation of proteins violates the "Thermodynamic Hypothesis"

74. The titration curve of glycine displays

(A) One buffering region at ph 7
(B) Two buffering regions
(C) Two pk_a values
(D) Both (B) and (C) are correct

75. The peptide bond is

(A) Unstable thermodynamically and kinetically
(B) Stable thermodynamically and kinetically
(C) Stable kinetically, but unstable thermodynamically
(D) Stable thermodynamically, but unstable kinetically

76. The peptide, Ala-Arg-Gln-Met-Thr-Trp-Lys-Val, was digested with cyanogen bromide (CNBr) to produce:

(A) Ala-Arg-Gln-Met + Thr-Trp-Lys-Val
(B) Ala-Arg-Gln-Met-Thr-Trp + Lys-Val
(C) Ala-Arg + Gln-Met-Thr-Trp-Lys-Val
(D) Ala-Arg-Gln + Met-Thr-Trp-Lys-Val

77. The same peptide, Ala-Arg-Gln-Met-Thr-Trp-Lys-Val, was digested with trypsin to produce:

(A) Ala-Arg + Gln-Met-Thr-Trp + Lys-Val
(B) Ala-Arg-Gln-Met + Thr-Trp-Lys-Val
(C) Ala-Arg-Gln-Met-Thr-Trp + Lys-Val
(D) Ala-Arg + Gln-Met-Thr-Trp-Lys + Val

78. In sickle cell anemia, the basis of the malfunction of the hemoglobin molecule is

(A) Substitution of a single amino acid (B) Incorrect secondary structure

(C) Faulty binding of the heme groups (D) Reduced affinity for oxygen

79. The molecular formula for glucose is $C_6H_{12}O_6$. What would be the molecular formula for a polymer made by linking ten glucose molecules together by dehydration synthesis?

(A) $C_{60}H_{120}O_{60}$ (B) $(C_6H_{12}O_6)_{10}$ (C) $C_{60}H_{102}O_{51}$ (D) $C_{60}H_{100}O_{50}$

80. Cellulose, a b(1->4)-linked glucose polysaccharide, differs from starch in that starch is

(A) $\alpha\ \beta$ (1->6)-linked manose polysaccharide

(B) $\alpha\ \beta$ (1->6)-linked glucose polysaccharide

(C) α (1->6)-linked glucose polysaccharide

(D) α (1->4)-linked glucose polysaccharide

81. Monosaccharides, such as ribose, fructose, glucose, and mannose differ significantly in their sweetness

(A) The positions of their carbonyl groups

(B) Their diastereomeric configurations

(C) Their number of carbon atoms

(D) All but the first choice are significant differences

82. Boat and chair conformations are found

(A) In pyranose sugars

(B) In furanose sugars

(C) In any sugar without axial -oh groups

(D) In any sugar without equatorial -oh groups

83. Which of the following is an example of a storage polysaccharide made by animals?

(A) Cellulose (B) Glycogen (C) Collagen (D) Amylopectin

84. The glycosidic bond

(A) Joins glucose and fructose to form sucrose

(B) In sucrose is hydrolyzed by bees to make honey from nectar

(C) N maltose is not hydrolyzed in "lactose intolerant" humans

(D) The first two choices are both correct

85. Cellulose fibers resemble ———— in proteins; whereas a-amylose is similar to ————.

(A) α-helices; b-sheets
(B) β-sheets; a-helices
(C) β-sheets; the hydrophobic core
(D) α-helices; b-turns

86. One of the venereal diseases is

(A) Syphilis (B) Typhoid (C) Leprosy (D) Plague

87. Antimicrobial substance present in saliva is,

(A) Lysozyme
(B) Penicillin
(C) Lactoferrin
(D) None of the above

88. Typhoid is caused by a

(A) Protozoan
(B) Bacterium
(C) Mycoplasma
(D) None of the above

89. *E. coli* in water is an indicator of ————

(A) Metal leaching
(B) Hardness of water
(C) Fecal contamination
(D) None of the above

90. Special pigments in blue green algae is called

(A) Phytocyanin
(B) Chlorophyll a
(C) Chlorophyll b
(D) Rhodopsin

91. Which one of the following is caused by DNA virus?

(A) Polio
(B) Rabies influenza
(C) Small pox
(D) Mumps

92. Bacteria can be divided into two classes by using

(A) Staining
(B) Gram's staining
(C) Sterilization
(D) Inoculation

93. One of the following is not a food borne pathogen

(A) Schigella (B) Salmonella

(C) Mycobacterium (D) Listeria

94. The disinfectant used in water is

(A) IRON (B) CALCIUM

(C) CHLORINE (D) PHOSPHATE

95. Legumes are excellent sources of

(A) Vitamin A (B) Vitamin B

(C) Vitamin C (D) Vitamin K

96. Temporary cytoplasm projections produced in some protozoa are

(A) Parapodia (B) Pseudopodia

(C) Fimbriae (D) Flagella

97. Germinated seeds have more of

(A) Lactose (B) Maltose (C) Glucose (D) Fructose

98. Which among the following undergoes rapid deterioration

(A) Meat (B) Chicken (C) Fish (D) Egg

99. The neurotoxin responsible for lathyrism is

(A) Propionic acid (B) Butanoic acid

(C) β-N-Oxylyl amino alanine (D) None of the above

100. Microbe that has been found in irradiated meat is

(A) Micrococcus roseus (B) Mycobacterium sp

(C) Candida sp (D) Clostridium botulinum