

ENTRANCE EXAMINATION FOR ADMISSION, MAY 2011.

M.Sc. (FOOD SCIENCE AND TECHNOLOGY)

COURSE CODE : 396

Register Number :

Signature of the Invigilator
(with date)

COURSE CODE : 396

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. Environmental factors such as temperature and pH exert their effect on the _____ of microbial cells
 (A) Membrane (B) DNA (C) Enzymes (D) Cell wall
2. An enzyme _____ the activation energy required for chemical reaction
 (A) Increases (B) Provides (C) Lowers (D) Catalyzes
3. Algin is
 (A) A polysaccharide (B) A lipid
 (C) A protein (D) A provitamin
4. Many coenzymes are
 (A) Metals (B) Vitamins (C) Proteins (D) Substrates
5. To digest cellulose in its environment, a fungus produces a/an
 (A) Endoenzymes (B) Exoenzymes (C) Catalase (D) Polymerase
6. Consider the following statements
 I. Carbohydrates are the compounds made up of carbon, hydrogen and oxygen
 II. Carbohydrates are polyhydroxyderivatives of aldehydes or ketones
 III. Carbohydrates are polyhydroxy acetals and ketals
 Which of the above statement is/are correct?
 (A) 2 only (B) 2 and 3 (C) 1 and 2 (D) 1, 2 and 3
7. Due to the presence of one or more asymmetric carbon atom, stereoisomerism is found in carbohydrates except
 (A) Dihydroxy acetone (B) Glyceraldehyde
 (C) Talose (D) Mannose
8. Two sugars differing only in configuration around one specific carbon atom are called
 (A) Anomer (B) Epimer (C) Isomers (D) Conformers
9. Which of the following pair of carbohydrates are anomers of each other?
 (A) α - Glucose and β - Glucose (B) α - Glucose and β - fructose
 (C) α - Glucose and α - Mannose (D) All of the above

10. Which of the following pairs are epimers of each other?
- (A) D-Glucose and D-mannose (B) D-Glucose and D-galactose
(C) D-Ribose and D-Arabinose (D) All of the above
11. The change in optical activity of racemic mixture is called
- (A) Reversion (B) Mutarotation
(C) Inversion (D) Isomerisation
12. Which of the following statement is correct?
- (A) The equatorial hydroxyl group of Pyranoses are easily esterified than axial
(B) The boat form of pyranose ring, which is relatively rigid and more stable than axial
(C) Monosaccharides are sensitive to hot dilute mineral acids
(D) All of the above
13. Concentrated acid causes
- (A) Dehydration of sugars
(B) Formation of furfurals
(C) Formation of aldehyde derivative of furan
(D) All of the above
14. Monosaccharide in slightly acidic solution react with excess phenylhydrazine to form
- (A) Sugar alcohol (B) Glycoside
(C) Glycosylamine (D) Osazone
15. What is phytic acid?
- (A) Hexaphosphoric acid of inositol
(B) Potassium salt of hexaphosphoric acid
(C) Phosphorous associated with mannitol
(D) Phosphoric acid of Sorbitol
16. Sugar capable of reducing _____ are called reducing agents
- (A) Cu^{2+} (B) Ag^+
(C) Ferricyanide (D) All of the above

17. Which of the following is a saccharifying enzyme?
 (A) α -Amylase (B) β -Amylase
 (C) Both (D) None of the above
18. Palatinose is isomer of sucrose and differs from it having
 (A) β -1, 2-glycosidic bond (B) α -1, 4-glycosidic bond
 (C) α -1, 6-glycosidic bond (D) β -1, 6-glycosidic bond
19. Hemicelluloses are
 (A) Isomers of cellulose (B) Derivatives of cellulose
 (C) Polymer of cellulose (D) Polymer of Talose
20. When valine is heated with glucose at 180°C the flavor produced is/are
 (A) Chocolate (B) Bread like
 (C) Caramel (D) All of the above
21. Modification of starch may affect
 (A) Gelatinization and heating time
 (B) Freezing stability and cold water stability
 (C) Viscosity
 (D) All of the above
22. Number of carbon atom in stearic acid is
 (A) 12 (B) 16 (C) 18 (D) 30
23. Which lipid is saponifiable?
 (A) Simple (B) Complex
 (C) Both (A) and (B) (D) None
24. Butterscotch aroma can be obtained by heating glucose with _____ at 180°C
 (A) Glutamate (B) Valine (C) Glycine (D) Leucine
25. The parent compound of phosphoglycerides is
 (A) Phosphatidic acid (B) Phosphoric acid
 (C) Glycerol (D) Glyceric acid

26. In strecker degradation, during maillard reaction, the aminoacids usually react with
(A) A-dicarbonyl compound (B) Glucose
(C) Glycerol (D) Schiff's base
27. EPA is
(A) $\omega - 2$ fatty acid (B) $\omega - 3$ fatty acid
(C) $\omega - 4$ fatty acid (D) ω fatty acid
28. Linoleic acid is
(A) $\omega - 2$ fatty acid (B) $\omega - 3$ fatty acid
(C) ω fatty acid (D) $\omega - 6$ fatty acid
29. ALA is a precursor of
(A) EPA (B) DHA
(C) Both (A) and (B) (D) None
30. Vegetable oil is rich in
(A) $\omega - 2$ fatty acid (B) $\omega - 3$ fatty acid
(C) $\omega -$ fatty acid (D) $\omega - 6$ fatty acid
31. Oleic acid can be transferred in to trans form up on
(A) Cooling (B) Heating
(C) Solidification (D) Hydrogenation
32. Essential fatty acid serve as precursor of
(A) Vitamin C (B) Prostaglandin
(C) Niacin (D) Retinol
33. Castor seed is rich in
(A) Ricinoleic acid (B) Oleic acid
(C) Linolenic acid (D) Linoleic acid
34. Ovomuroid is found to be
(A) Antibiotic in nature (B) Trypsin inhibitor
(C) Iron binder (D) Haemoglutation inhibitor

35. What is dilatometry?
- (A) Measurement of degree of unsaturation of fatty acids
 - (B) Measurement of degree of hydrogenation
 - (C) Measurement of melting point of fat
 - (D) Measurement of crystallinity of fat
36. Trans fatty acids are found in some plant oil such as
- (A) Pomegranate oil
 - (B) Mustard oil
 - (C) Coconut oil
 - (D) Citrus oil
37. Which of the following is a biotin binder?
- (A) Avidin
 - (B) Aflatoxin
 - (C) Gossypol
 - (D) Ovalbumin
38. A substance incorporates into a polymeric material to increase its deformity is called
- (A) Stabilizer
 - (B) Emulsifier
 - (C) Plasticizer
 - (D) All of the above
39. Colorant used in butter is
- (A) Annato
 - (B) Erythrosine
 - (C) Congo red
 - (D) None of the above
40. "Pinking" can be avoided by
- (A) Blanching
 - (B) AR enamel
 - (C) Treatment of fruit with vinegar
 - (D) Blairs process
41. Maximum amount of psi angle in the peptide bond is
- (A) -40°
 - (B) -50°
 - (C) -60°
 - (D) -70°
42. The peptide bond has
- (A) Planar structure
 - (B) Angular structure
 - (C) Tetrahedral structure
 - (D) Pyramidal structure
43. Simmering is
- (A) Closing the mouth of can during canning process
 - (B) Gentle boiling with temperature about 100°C
 - (C) Killing the microorganism with the help of antibiotics
 - (D) Method of removal of contaminants from the raw material

44. What is Ale?
 (A) Fermented corn (B) Type of beer
 (C) Fermented carrot (D) None of the above
45. Ginger beer is produced by the use of
 (A) *Lactobocillus bulgaricus* (B) *Saccharomyces bulgaricus*
 (C) *Saccharomyces pyriformis* (D) *Rhizopus sonti*
46. Sarcina sickness is the defect of
 (A) Wine (B) Sauer kraut (C) Beer (D) Bread
47. Green beer is
 (A) Spoiled beer contaminated by *Pseudomonas* sp.
 (B) An artificial beer manufactured by mixing water with beer flavor and added color
 (C) Beer like beverage obtained from plant extract
 (D) Freshly prepared beer which is further stored at 0°C for few months
48. Rum is
 (A) Distilled liquor (B) Undistilled liquor
 (C) Fortified wine (D) By product of brewing industry
49. The force involved in crushers is
 (A) Impact force (B) Compression (C) Attrition (D) Pseudo force
50. Reynolds number is
 (A) Ratio b/w inertial force and viscous force
 (B) Ratio b/w viscous force and inertial force
 (C) Ratio b/w inertial force and pressure
 (D) Ratio b/w viscous force and pressure difference
51. The Tylor standard screen series is based on
 (A) 240 mesh screen (B) 200 mesh screen
 (C) 150 mesh screen (D) 100 mesh screen

52. Electrostatic separator make use of
 (A) Magnetic properties (B) Electrical properties
 (C) Densities (D) Moisture content
53. Which of the following is power number
 (A) $NDa^2\rho/\mu$ (B) $N^2 D_a/p$ (C) $\rho g_e/N^3 D_a^5$ (D) NDP^2/p
54. For a Newtonian fluid, the slope of the graph between shear stress and shear rate is
 (A) $\tan 45^\circ$ (B) $\tan 60^\circ$ (C) $\tan 90^\circ$ (D) $\tan 30^\circ$
55. The most widely used blade is
 (A) Dispersion (B) Sigma
 (C) Double nabes (D) All of the above
56. Hagen-Poiseulle-equation is useful for measuring the
 (A) Viscosity (B) Density
 (C) Heat capacity of the fluid (D) Reynold number of the fluid
57. At _____ moisture content constant rate period ends and falling rate period starts
 (A) Critical (B) Specific (C) 90% (D) Initial
58. Which of the following is a variable arm meter?
 (A) Venturimeter (B) Rotameter
 (C) Pitotmeter (D) All of the above
59. Food gels are examples of
 (A) Plastic solids (B) Elastic solids
 (C) Gels are not solids (D) None of the above
60. Pressure is always a
 (A) Horizontal stress (B) Normal stress
 (C) Vertical strain (D) Horizontal strain
61. Polished surface have
 (A) Maximum absorptivity (B) Low emissivity
 (C) Moderate emissivity (D) Zero emissivity

62. Which of the following is most suitable for transportation of sticky material?
 (A) Screw conveyor (B) Pneumatic conveyor
 (C) Belt conveyor (D) Apron conveyor
63. 100 Kg of orange juice to be dried from 60% to 20% moisture (by weight). The mass of moisture removed in Kg is
 (A) 52 (B) 20 (C) 40 (D) 50
64. Match the following dimensionless number with field of use
- | | |
|-------------------|-------------------------------|
| A. Grashof Number | 1. Compressive flow |
| B. Froude Number | 2. Free convection |
| C. Euler Number | 3. Free surface flow |
| D. Mach Number | 4. Pressure variation in flow |
- A B C D
- (A) 2 1 4 3
 (B) 4 3 2 1
 (C) 2 3 4 2
 (D) 4 1 2 3
65. Tooth paste is
 (A) Bingham plastic (B) Pseudoplastic
 (C) Newtonian fluid (D) Dilatent
66. Mixing of two fluid is
 (A) Reversible process (B) Irreversible process
 (C) Isothermal process (D) None of these
67. The thermal conductivity is minimum for
 (A) Silver (B) Chrome nickel steel
 (C) Aluminium (D) Carbon steel
68. Marinades are prepared from
 (A) Egg (B) Meat (C) Fish (D) Cereals

69. Nitrate and Nitrite is helpful in meat processing as it
- (A) Increases tenderness
 - (B) Increase juiciness
 - (C) Improves color
 - (D) Prevent from microbial contamination
70. Veal is obtained from
- (A) Sheep
 - (B) Buffalo
 - (C) Goat
 - (D) Calf
71. Function of casing in sausage is/are
- (A) Packing
 - (B) Tenderization of meat
 - (C) Prevention of fat and moisture loss during smoking and cooking
 - (D) All of the above
72. For smoking, which type of wood is used
- (A) Hard wood
 - (B) Soft wood
 - (C) Sandal wood
 - (D) Any of the above
73. Fish proteins are more digestible than meat protein because
- (A) The amount of connective present is more
 - (B) The amount of connective tissue present is less
 - (C) The amount of muscle fibers present is more
 - (D) The amount of muscle fiber present is less
74. Method of fish liver oil extraction generally followed in small cottage scale industry is
- (A) Method of auto fermentation
 - (B) Method of boiling
 - (C) Method of chemical digestion
 - (D) Method of steaming

75. Glazing of fish is done to protect the fish from
(A) Microbial spoilage (B) Freezer burn
(C) Oxidation and freezer burn (D) Chemical spoilage
76. The branch of science which deals with the study of muscle is termed as
(A) Mycology (B) Myology (C) Cytology (D) Onchology
77. Meat juiciness depends on
(A) Amount of fat in meat (B) Amount of fat and WHC of meat
(C) Connective tissue (D) Protein present in connective tissue
78. The superior method of slaughter of meat animals as far as efficacy of bleeding is considered is
(A) Jhatka method (B) Halal method
(C) Kosher method (D) Both (A) and (B)
79. The shrinkage of meat is greater at pH
(A) 4.0 (B) 5.8 (C) 7.0 (D) 5.6
80. Cooked meat suppose to have
(A) Red to pink (B) Red to dull red color
(c) Dull red to brown color (D) Dull red to pink color
81. In the reading room of a library, there are 23 reading spots. Each reading spot consists of a round table with 9 chairs placed around it. There are some readers such that in each occupied reading spot there are different numbers of readers. If in all there are 36 readers, how many reading spots do not have even a single reader?
(A) 8 (B) None (C) 16 (D) 15

82. Ferrari S.P.A. is an Italian sports car manufacturer based in Maranello, Italy. Founded by Enzo Ferrari in 1928 as Scuderia Ferrari, the company sponsored drivers and manufactured race cars before moving into production of street-legal vehicles in 1947 as Feraari S.P.A. Throughout its history, the company has been noted for its continued participation in racing, especially in Formula One where it has employed great success. Rohit once bought a Ferrari. It could go 4 times as fast as Mohan's old Mercedes. If the speed of Mohan's Mercedes is 46 km/hr and the distance traveled by the Ferrari is 953 km, find the total time taken for Rohit to drive that distance.
- (A) 20.72 (B) 5.18 (C) 238.25 (D) 6.18
83. Middle-earth is a fictional land inhabited by Hobbits, Elves, dwarves and men. The hobbits and the Elves are peaceful creatures who prefer slow, silent lives and appreciate nature and art. The dwarves and the men engage in physical games. The game is as follows. A tournol is one where out of the two teams that play a match, the one that loses get eliminated. The matches are played in different rounds where in every round, half of the teams get eliminated from the tournament. If there are 8 rounds played in a knock-out tournol how many matches were played?
- (A) 257 (B) 256 (C) 72 (D) 255
84. A research lab in Chennai requires 100 mice and 75 sterilized cages for a certain set of laboratory experiments. To identify the mice, the lab has prepared labels with numbers 1 to 100 by combining tags numbered 0 to 9. The SPCA requires that the tags be made of toxin-free material and that the temperature of the cages be maintained at 27 degree Celsius. Also, not more than 2 mice can be caged together and each cage must be at least 2 sq.ft in area. The 5 experiments to be conducted by lab are to be thoroughly documented and performed only after a round of approval by authorities. The approval procedure takes around 48 hours. How many times the tag is numbered '4' used by the lab in numbering these mice?
- (A) 9 (B) 19 (C) 20 (D) 21
85. There are two water tanks A and B, A is much smaller than B. While water fills at the rate of one litre every hour in A, it gets filled up like 10, 20, 40, 80, 160,.. in tank B. (At the end of first hour, B has 10 litres, second hour it has 20, and so on). If tank B is $\frac{1}{32}$ filled after 21 hours, what is the total duration required to fill it completely?
- (A) 26 hrs (B) 25 hrs (C) 5 hrs (D) 27 hrs

86. Francois Pachet, a researcher at Sony Computer Science laboratories is also a jazz musician. He decided to build a robot able to improvise like a pro. Named Continuator, the robot can duet with a live musician in real-time. It listens to a musical phrase and then computes a complementary phrase with the same playing style. If the cost of making the robot is divided between and then computes a complementary phrase with the same playing style. If the cost of making the robot is divided between materials, labour and overheads in the ratio of 4 : 6 : 2. If the materials cost \$ 108, The cost of the robot is
- (A) \$270 (B) \$324 (C) \$216 (D) \$648
87. A man jogs at 6 mph over a certain journey and walks over the same route at 4 mph. What is his average speed for the journey?
- (A) 2.4 mph (B) 4 mph (C) 4.8 mph (D) 5 mph
88. There is a dice having value from 1 to 6 on each face and a pack of cards having face card aces. When 2 dies are thrown and their scores are added then which sum will come max number of times?
- (A) 8 (B) 9 (C) 10 (D) 11
89. Form 8 digit numbers from by using 1, 2, 3, 4, 5 with repetition is allowed and must be divisible by 4?
- (A) 31250 (B) 97656 (C) 78125 (D) 97657
90. In school there are some bicycles and 4 wheeler wagons. One Tuesday there are 190 wheels in the campus. How many bicycles are there?
- (A) 14 (B) 15 (C) 16 (D) 5
91. It is dark in my bedroom and I want to get two socks of the same color from my drawer, which contains 24 red and 24 blue socks. How many socks do I have to take from the drawer to get at least two socks of the same color?
- (A) 2 (B) 3 (C) 48 (D) 25
92. In a market 4 man are standing the average age of the four before 4 years is 45, after some days one man is added and his age is 49. What is the average weight of all?
- (A) 47 (B) 48 (C) 49 (D) 50
93. How many 3's are there in the following sequence which are neither preceded by 6 nor immediately followed by nine
- 9 3 6 6 3 9 5 9 3 7 8 9 1 6 3 9 6 3 9
- (A) 1 (B) 2 (C) 3 (D) 4

94. How many odd numbers are there in the sequence which are immediately preceded by an odd number
 5 1 4 7 3 9 8 5 7 2 6 3 1 5 8 6 3 8 5 2 2 4 3 4 9 6
 (A) 1 (B) 2 (C) 4 (D) More than 4
95. In a class of 50 students a boy ranks 31 from the top. What is his place from the bottom
 (A) 20 (B) 19 (C) 21 (D) 18
96. Among A, B, C, D and E, B is longer than E but smaller than A. C is smaller than D and D is not so long as E. If all stands in order of their height, who will be in the middle?
 (A) C (B) A (C) E (D) B
97. Which of the following statement regarding a scalar matrix is correct?
 (A) A scalar matrix is a matrix whose all elements are equal
 (B) Their diagonal elements are equal
 (C) Their all elements are zero
 (D) Their all elements are odd numbers
98. Given that $\tan A = 1/3$, $\tan B = 1/2$, so what is the value of $\tan (2A + B)$?
 (A) 1 (B) 2 (C) 3 (D) 4
99. If the roots of $X^2 + bx + C = 0$ are two consecutive integers. What is the value of $b^2 - ac - 1$?
 (A) 0 (B) 1 (C) 3 (D) 9
100. What is the LCM of $2! 4! 8! 15!$?
 (A) $2!$ (B) $4!$ (C) $8!$ (D) $15!$