

ENTRANCE EXAMINATION FOR ADMISSION, MAY 2012.

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. Prominent differences between prokaryotic and eukaryotic cells is the
 - (A) Larger size of prokaryotes
 - (B) Lack of pigments in eukaryotes
 - (C) Presence of a nucleus in eukaryotes
 - (D) Presence of a cell wall in prokaryotes

2. The following part was absent in Leuwenhock's microscope

(A) Focusing screw	(B) Lens
(C) Specimen holder	(D) Condenser

3. The scientist who laid the theory of spontaneous generation was

(A) Lois Pasteur	(B) Carl Von Line
(C) Robert Koch	(D) John Tyndall

4. The term culture refers to the _____ growth of microorganism in

(A) Rapid an incubator	(B) Macroscopic, media
(C) Microscopic, the body	(D) Artificial colonies

5. A mixed culture is
 - (A) The same as a contained culture
 - (B) One that has been adequately stirred
 - (C) One that contains two or more known species
 - (D) A pond sample containing algae and protozoa

6. Most heat resistant spores is

(A) <i>Staphylococcus aureus</i>	(B) <i>Clostridium botulinum</i>
(C) <i>Cl. Sporogens</i>	(D) <i>Bacillus stearothermophilus</i>

7. In the microbial estimation using impedance
 - (A) The psychrotrophs show long selection time
 - (B) Coliforms shows short detection time
 - (C) Lactobacillus shows short detection time
 - (D) All the above

8. Which of the following is not the immunomagnetic particle
 - (A) Polystyrene paramagnetic micro particle
 - (B) Polystyrene/ divinely- benzene
 - (C) Polyacrolein/ iron sulphate particles
 - (D) Dynabeads

9. Chaitin assay is used for the determination of
 (A) Bacteria (B) Molds and yeasts
 (C) Algae (D) Protozoans
10. Microscopic and electronic method is expressed in terms of
 (A) Numer of cell/ml (B) C.f.u /ml
 (C) Optical density (D) None of the above
11. Coconut extract agar detects
 (A) Aflatoxin (B) Ochratoxin
 (C) Penicillin (D) Calcitonin
12. Maltodextrin have DE value
 (A) Less than 5 (B) Less than 50
 (C) Less than 20 (D) More than 50
13. If buffers are present The rate of browning reaction
 (A) Decreases (B) Increases
 (C) Remains constant (D) Cannot be predicted
14. In hard water, which of the following salts is / are present
 (A) Sodium chloride (B) Sodium bicarbonate
 (C) Magnesium sulphate (D) All of the above
15. Millard reaction is favored in more
 (A) Acidic conditions (B) Alkaline conditions
 (C) Neutral conditions (D) It is pH independent
16. End product of Maillard reaction is
 (A) Melanin (B) Melanoidins
 (C) Carmel (D) All the above
17. Agar seems to decrease its gel strength when pH changes towards
 (A) Acidity (B) Alkalinity
 (C) Neutrality (D) It is independent of pH
18. The product of enzymic browning is
 (A) Melanin (B) Melanoidins
 (C) Caramel (D) All of the above

19. Which of the following statement is correct
- (A) Retrogradation of starch is more if starch is having more amylopectin
 - (B) Retrogradation of starch is more if starch is having more amylase
 - (C) Retrograding of starch is more if flour is having more lipid
 - (D) None of the above
20. Which if the following process is responsible for the staling of bread
- (A) Gelatinization
 - (B) Retrogradation
 - (C) Hydrolysis of starch
 - (D) All the above
21. Alginates have
- (A) Galactouronic acid and glucouronic acid
 - (B) Galacturonic acid and mannouronic acid
 - (C) Glucouronic acid and mannouronic acid
 - (D) Galactouronic acid, glucouronic acid and mannouronic acid
22. Gelatinization of starch is
- (A) Endothermic process
 - (B) Exothermic process
 - (C) Reversible
 - (D) Responsible For staling of bread
23. Use of agar is in
- (A) Microbiologica lexperiemtn
 - (B) Bakery industry
 - (C) Confectionaly industry
 - (D) All of the above
24. Starch gel is
- (A) Pseudoplastic
 - (B) Plastic
 - (C) Elastic
 - (D) Thixotropic
25. Waxy starch has
- (A) More amylopectin and less amylase
 - (B) More amylose and less amylopectin
 - (C) Both amylose and amylopectin in equal amount
 - (D) None of the above
26. Safonification index is useful in expressing
- (A) Mean molecular weigh of fats/ oils
 - (B) Degree of unsaturation of oil
 - (C) Extend of rancidity
 - (D) None of the above
27. Propyl gallate is used in fats/ oil processing industry as
- (A) Synergistic
 - (B) Plasticizer
 - (C) Emulsifier
 - (D) Antioxidants

28. Agar is obtained from
 (A) Gelidium spp. (B) Pseudomonas spp.
 (C) Aspergillus spp. (D) None of the above
29. Which of the following acts as the synergistic
 (A) Citric acid (B) Acetic acid
 (C) Benzoic acid (D) Formic acid
30. Which of the Following is are natural antioxidant present in oil
 (A) Butylated hydroxyl anisole (B) Tocopherol
 (C) Ascorbic acid (D) All the above
31. Which of the following is/are used as the antioxidants in fats and oil processing
 (A) Calcium propionate
 (B) Butlyated hydroxyl hydrazine
 (C) Butylated hydroxyl anisole
 (D) All the above
32. Isotachophoresis is also called
 (A) Iso - electric focusing (B) Displacement electrophoresis
 (C) Chromatography (D) None of the above
33. In iso- electric focusing the gradient increases from
 (A) High pH at the cathode (B) Low pH at the cathode
 (C) High pH at anode (D) Low pH at anode
34. PAGE is
 (A) Partition, adsorption and gel electrophoresis
 (B) Polyacrylamide gel electrophoresis
 (C) Principle adsorbent for gel electrophoresis
 (D) None of the above
35. Which of the following separation methods does not depend upon the charges and the size of the separating material
 (A) Ion exchange chromatography (B) Gel filtration
 (C) Affinity chromatography (D) PAGE
36. Supercritical fluid chromatography refers to the chromatography performed at a pressure and temperature
 (A) Above the critical value of mobile phase
 (B) Below the critical value of mobile phase
 (C) Above the critical value of stationary phase
 (D) Below the critical value of stationary phase

37. ANSA is used for the estimation of
 (A) Iron (B) Calcium
 (C) Phosphorus (D) Copper
38. Folin-Lowry method is for the estimation of
 (A) Sugar (B) Protein
 (C) Vitamin K (D) Copper
39. The reagent used for the estimation of protein by Lowry's method is/ are
 (A) Phosphomolybdate (B) Tungstomolybdate
 (C) Molybdic acid (D) All of the above
40. Wongs method is used for the estimation of
 (A) Reducing sugar (B) Iron
 (C) Biotin (D) Aflatoxin
41. Which of the following mineral is not estimated calorimetrically
 (A) Calcium (B) Copper
 (C) Iron (D) Phosphorus
42. Soxhlet method is used for the determination of
 (A) Crude fat (B) Crude protein
 (C) Crude fibre (D) None of the above
43. Soxhlet method is based on the principle of
 (A) Chemical analysis (B) Solvent extraction
 (C) Colorimetry (D) Chromatography
44. For the estimation of fatty acid composition of fat by gas chromatography, the first step is
 (A) Isomerization (B) Transstrification
 (C) Derivatization (D) Hydrogenation
45. In derivatization of fat, fat is converted to
 (A) Fatty acids (B) Fatty acid methyl ester
 (C) Glycerol (D) Soap
46. Cold test of fat is the measure of
 (A) Freezing point of oil
 (B) Strength of solid fats at -2.5°C
 (C) Resistance of oil to crystallization
 (D) Viscosity of oil at the temperature just above the freezing point

47. Kjeldalhs method is for the estimation of
 (A) Crude fibre contents (B) Crude fat content
 (C) Crude protein content (D) None of the above
48. What is the basic step in kjeldhals method
 (A) Digestion (B) Distillation
 (C) Titration (D) All of the above
49. In the estimation of cholesterol in food by gas chromatography the derivative product is
 (A) Trimethylacetyl (B) Trimethyl chloride
 (C) Trimethylsilyl ether (D) All of the above
50. In the gas chromatography the area under a graph show the
 (A) Type of compound present in the sample
 (B) Concentration of the substance present in the sample
 (C) Elution time
 (D) Cost of estimation of unit sample
51. ————— is the ratio of concentration of solute in stationary phase to concentration of solute in mobile phase
 (A) Partition coefficient (B) Concentration gradient
 (C) Rf value (D) Elution ratio
52. Bile salts are bile acids in conjugation with
 (A) Glycien or serine (B) Glycine or taurine
 (C) Glycien or chenodoxycholic acid (D) Glycine or potassium
53. Which of the following amino acids is present in bile acids
 (A) Alanine (B) Glyceine
 (C) Phenylalanine (D) Methinine
54. Which of the following is the primary bile acid
 (A) Cholic acid (B) Hydrochloric acid
 (C) Tartaric acid (D) All of the above
55. Squalene is formed by the condensation of ————— isoprenoids
 (A) 2 (B) B.6
 (C) C.18 (D) D.27

56. Cholesterol is synthesized from
- (A) Alanine (B) Stearic acid
(C) Acetyl coenzyme (D) Choline
57. The enzymes for lipid biosynthesis is present in
- (A) Mitochondria (B) Nucleus
(C) Endoplasmic reticulum (D) Lysosome
58. Fructose is converted to fructose -1- phosphate by the action of enzymes
- (A) Fructokinase (B) Hexokinase
(C) Fructophosphatase (D) Fructo- phosphor transferase
59. Nutrition includes the study of _____
- (A) The organism's food
(B) Process of digestion
(C) The way an organism obtains food
(D) All of the above
60. Autotrophic organisms include
- (A) Green plants and sulphur bacteria
(B) Green plants and all the bacteria
(C) Bacteria and virus
(D) Bacteria and fungi
61. Organisms that synthesise their own food are called _____
- (A) Green plants (B) Sulphur bacteria
(C) Autotrophs (D) Purple-sulphur bacteria
62. Amoeba feeds with the help of _____
- (A) Tentacles (B) Pseudopodia
(C) Food vacuole (D) None of the above
63. An example of higher plant parasite is _____
- (A) Pythium (B) Phytophthora
(C) Agaricus (D) Cuscuta.
64. In cytochrome, the electron are picked up and released by
- (A) Iron (B) Molybdenum
(C) Copper (D) Zinc

65. Number of oxygen molecules required for glycolytic breakdown of one glucose molecule
 (A) Zero (B) Three (C) Six (D) Thirty eight
66. Rate of respiration shall
 (A) Increase with the rise in temperature
 (B) Decrease in the presence of light
 (C) Increase in winter
 (D) No change with season and environment condition
67. RQ of protein is
 (A) More than unity (B) Less than unity
 (C) Unit (D) Zero
68. In pentose phosphate shunt the net formation of ATP molecule is
 (A) 12 (B) 6 (C) 2 (D) 10
69. Which one is the final electron acceptor
 (A) OAA (B) NADP (C) Cytochrome (D) Pyruvate
70. For any enzymatic reaction, K_m is
 (A) The concentration of product
 (B) The concentration of enzyme
 (C) The concentration of substrate
 (D) The concentration of the intermediates
71. Enzymes with different forms but performing similar function is called
 (A) Apoenzyme (B) Holoenzyme
 (C) Isoenzyme (D) Alloenzyme
72. Extra mitochondrial source of NADH for ETC is
 (A) HMP (B) Krebs cycle
 (C) EMP (D) All of the above
73. Which of the following is associated with lipid metabolism
 (A) HMP pathway (B) EMP
 (C) Carnitine transport system (D) All of the above
74. Oxidation of lipids take place in
 (A) Mitochondria (B) Cytoplasm
 (C) Ribosome (D) Endoplasmic reticulum

75. In cells the free fatty acids are present in combination with
 (A) a protein (B) z protein
 (C) Q protein (D) X protein
76. How many ATP is gained from the α oxidation of one molecule of $C_{16:0}$ fatty acid
 (A) 115 (B) 129 (C) 131 (D) 138
77. How many ATP is gained from the Krebs cycle of one molecule of acetyl Co-A
 (A) 10 (B) 12 (C) 15 (D) 17
78. End product of β oxidation of fatty acid is
 (A) Pyruvic acid (B) Actyle CoA
 (C) Acetone (D) Carbon dioxide and water
79. The eating disorder that is characterized by self imposed starvation is
 (A) Anorexia (B) Flatulence
 (C) Obesity (D) Malnutrition
80. Ribose molecule is seen in the structure of
 (A) Vitamin B₆ (B) Vitamin B₁
 (C) Vitamin B₂ (D) Vitamin B₁₂
81. When pantothenic acid degrades under acidic conditions, the product formed is
 (A) β tocopherol (B) β alanine
 (C) β glucose (D) None of the above
82. Thiazolidine is the product of heating of food containing which of the following vitamin
 (A) Pyridoxine (B) Biotin
 (C) Ascorbic acid (D) Folic acid
83. Polishing of rice removes
 (A) Vitamin K (B) Vitamin B₁
 (C) Vitamin C (D) Vitamin A
84. _____ is the component of CoA
 (A) Vitamin K (B) Thiamin
 (C) Pantothenic acid (D) Biotin
85. 2 Methyl-1,4- naphthaquinone is the integral structure of vitamin
 (A) A (B) B₂ (C) K (D) C

86. Yellow green fluorescence in the whey shows the presence of which vitamin
 (A) Riboflavin (B) Ascorbic acid
 (C) Thiamine (D) Biotin
87. Pterin residue is found in which of the following vitamin
 (A) Riboflavin (B) Ascorbic acid
 (C) Retinol (D) Folic acid
88. The ATP synthase complex produces _____ ATP 's for each NADH that enters electron transport system
 (A) 1 (B) 2 (C) 3 (D) 4
89. At which site the FADH formed during the TCA cycle enters the electron transport system
 (A) NADH dehydrogenase (B) Cytochrome
 (C) Coenzyme Q (D) ATP synthase
90. The compound that enters the TCA cycle from glycolysis is
 (A) Citric acid (B) Oxaloacetic acid
 (C) Pyruvic acid (D) Acetyl coenzyme A
91. The net yield of ATP's given off in the fermentation of a glucose in aerobic respiration is
 (A) 40 (B) 6 (C) 38 (D) 2
92. The number of ATP's in complete oxidation of glucose molecule is
 (A) 4 (B) 6 (C) 38 (D) 2
93. Which of the following statements regarding enteral nutrition formulas is TRUE?
 (A) Polymeric formulas are those that contain all macronutrients in whole (ie non-hydrolyzed) form, semi-elemental formulas do not contain all three macronutrients
 (B) For acute pancreatitis within 48 hours of hospital admission, jejunal delivery of semi-elemental formulas is the preferred form of nutrition support
 (C) Enteral formulas are formulated to provide adequate micronutrients if caloric requirements are being met
 (D) Specialty formulas for liver and pulmonary disease are superior to regular polymeric formulas in patients with cirrhosis and COPD, respectively

94. Which of the following is an acceptable method for determining caloric needs for nutrition support?
- (A) Caloric needs per kilogram of body weight (ie 25-30 kcal/kg body weight)
 (B) Underwater weighing
 (C) Cockcroft-Gault equation with activity modifier
 (D) Anthropometry and Body impedance analysis
95. Which of the following is NOT a clinical consequence of refeeding syndrome?
- (A) Hypophosphatemia (B) Hypomagnesemia
 (C) Hypervolemia (D) Hyperphosphatemia
96. Which one of the following micronutrients is routinely added to TPN?
- (A) Vitamin D (B) Iron
 (C) Vitamin E (D) Vitamin K
97. A 50 year old man had a massive small bowel resection secondary to a volvulus 1 year ago, leaving him with 75cm of small bowel. If he did not receive adequate nutrition support, how long would it take to develop biochemical or clinical evidence of essential fatty acid deficiency?
- (A) 4 days (B) 4 weeks (C) 4 months (D) 1 year
98. Which one of the following medications can be added to TPN in the appropriate clinical circumstances?
- (A) H2 Receptor Antagonists (B) Proton pump inhibitors
 (C) Fluroquinolones (D) Narcotics
99. Which one of the following statements is TRUE regarding central venous catheter infections in patients receiving long term home total parenteral nutrition
- (A) The most common organism causing catheter infection is staphylococcus Aureus.
 (B) Double lumen catheters reduce the risk of catheter infection compared with single lumen catheters
 (C) Femoral catheters reduce the risk of catheter infection compared with subclavian catheters
 (D) In an uncomplicated catheter infection the accepted standard of care is to start antibiotic therapy without removing the catheter
100. In which of the following clinical situations should >1.0g protein per kg body weight be provided in nutrition support?
- (A) Patients with renal failure on hemodialysis
 (B) Hospitalized patients
 (C) Obese patients
 (D) Cirrhosis with hepatic encephalopathy.