

ENTRANCE EXAMINATION FOR ADMISSION, MAY 2011.

Ph.D. (FOOD SCIENCE AND NUTRITION)

COURSE CODE : 152

Register Number :

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*Signature of the Invigilator  
(with date)*

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COURSE CODE : 152

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. Peppers can deliver a very hot sensation when consumed because of the Level of in \_\_\_\_\_ the pepper.  
(A) fructose (B) citric acid  
(C) theobromine (D) capsaicin
2. The chemical name for table salt is  
(A) sodium bicarbonate (B) potassium nitrate  
(C) sodium chloride (D) sodium bisulfite
3. When proteins begin to break down in meat the process is called  
(A) protcolysis (B) lipolysis  
(C) glycolysis (D) hydrolysis
4. A compound that has little or no flavor itself but is added to food to assist or boost the primary flavor of the food to which it s added is a  
(A) processing aid (B) humectant  
(C) stabilizer (D) flavor enhancer
5. Glucose is a simple sugar, also known as a  
(A) disaccharide (B) monosaccharide  
(C) polysaceharide (D) multisaccharide
6. When a food processing plant is cleaned at the end of a production day, the order of clean up is  
(A) rinse, clean with detergent, dry pick up, rinse, sanitize  
(B) clean with detergent. rinse, sanitize, rinse, dry pick up  
(C) dry pick up, rinse, clean with detergent, rinse, sanitize  
(D) dry pick up, rinse, clean with detergent, sanitize, rinse
7. When water is used as an ingredient in food formulations, it must be  
(A) soft water (B) potable water  
(C) hard water (D) purified water
8. \_\_\_\_\_ is an ingredient used in loud to slow the reaction of lipids forming free radicals leading to oxidative rancidity in food.  
(A) Butylated hydroxyanisole (B) Sodium caseinate  
(C) Potassium sorbate (D) Disodium inosinate

9. All the essential amino acids would most likely be found in one serving of  
(A) peanuts (B) legumes (C) bran cereal (D) beef
10. The brownish color of aerobically packaged ground beef that has been stored in a refrigerator for several days is due to  
(A) deoxymyoglobin (B) metmyoglobin (C) myoglobin (D) oxymyoglobin
11. \_\_\_\_\_ is a preventative food safety program required by juice processors.  
(A) GMP's (B) SSOP's  
(C) Quality assurance (D) HACCP
12. The building blocks of protein are called  
(A) amino acids (B) monosaccharides  
(C) fatty acids (D) triglycerides
13. The enzyme added to milk to cause curd formation in cheese is called  
(A) amylase (B) rennin (C) lactase (D) maltase
14. Good Manufacturing practices are used to  
(A) enforce strict laws related to safety regulations  
(B) evaluate the design of food processing plants  
(C) cover the consumer aspect of food processing  
(D) brief food suppliers of their product safety
15. FSIS stands for  
(A) Food Safety and Inspection Administration  
(B) Food Safety and Inspection Service  
(C) Fiber Safety Inspection Service  
(D) Food and Drug Administration
16. The HACCP process uses \_\_\_\_\_ to show the entire food processing operation.  
(A) personnel (B) flow charts and diagrams  
(C) food processing software (D) risk assessment
17. In HACCP systems, critical points should be identified so that hazard can be  
(A) produced (B) eliminated (C) detoured (D) detected

18. The first KVK in India is at  
(A) Pondicherry (B) Pattambi (C) Jalna (D) Varanasi
19. The example for  $c_4$  plant is  
(A) Rice (B) Wheat (C) Cotton (D) Maize
20. A synthetic hormone to increase milk production is  
(A) BSA (B) BSE  
(C) BST (D) None of the above
21. Which of the following is NOT a type of food processing?  
(A) Cold processing (B) Rehydration  
(C) Fermentation (D) Irradiation
22. Which of the following processes changes liquid oils into semisolids and makes the oil less susceptible to oxidation and rancidity?  
(A) fermentation (B) hydrogenation  
(C) rehydration (D) oxidization
23. An addition of a nutrient to foods such as adding vitamin D to milk is called  
(A) Irradiation (B) Fermentation (C) Enrichment (D) Fortification
24. If acidic foods (such as tomatoes) are added to milk,  
(A) fat coagulates (B) fat content increases  
(C) casein coagulates (D) whey coagulates
25. Which of the following foods cannot be effectively frozen?  
(A) broccoli (B) cabbage (C) carrots (D) lettuce
26. Three kinds of information must be found on a food label. One of those listed is incorrect. Which one of the following is incorrect?  
(A) product identification  
(B) name and address of the manufacturer, packer, or distributor  
(C) net contents or net weight  
(D) sources of food ingredients

27. Antioxidants perform all of the following except  
(A) Prevent protein degradation (B) Preserve color  
(C) Minimize rancidity (D) Preserve flavor
28. A chemical linked to long-term effect such as cancer, sterility and birth defects could cause which of the following  
(A) chronic toxicity (B) acute toxicity  
(C) defect action levels (D) total adverse response
29. LD50 represents  
(A) The concentration of a chemical at which half of the test animals die  
(B) A test for neurotoxins  
(C) Lethality when the dosage level is multiplied by 50  
(D) A measurement of species specificity
30. A toxin commonly found in corn and peanuts is:  
(A) Solanine (B) Protease (C) Goitrogens (D) Aflatoxins
31. Example of chemosynthetic bacteria are  
(A) E. coli (B) Sulphur bacteria  
(C) Cyanobacteria (D) Nitrobacter
32. Which of the Following is not a primary function of protein?  
(A) growth and maintenance of cells  
(B) production of antibodies  
(C) provides good and readily available source of energy  
(D) tissue and nerve development
33. Viruses are known to infect  
(A) Plant (B) Bacteria  
(C) Fungi (D) All organisms
34. Highest unit of radiation is  
(A) Rad (B) Gray (C) Kilo gray (D) Megarad
35. A chemical with sporicidal property is  
(A) Phenol (B) Alcohol  
(C) Quaternary ammonium compound (D) Glutaraldehyde

36. Which of the following is the intrinsic factor for microbial spoilage?  
 (A) pH (B)  $a_w$  (C) Preservative (D) Packaging
37. Can blackening is due to  
 (A) Salmonella (B) Proteus  
 (C) Clostridium thermosaccharolyticum (D) Cl. ningrificians
38. The color of spores in wirtz method is  
 (A) Red (B) Green (C) Pink (D) Blue
39. The decolorizer used in the case of Flagella staining is  
 (A) Water (B) Alcohol  
 (C) Calcium hydroxide (D) Hexane
40. The enzyme involved in nitrate reduction test is  
 (A) Flavin enzyme (B) Thiamine enzyme  
 (C) Uracil enzyme (D) None of the above
41. The optimum level of carbon dioxide in the atmosphere is  
 (A) 0.3% (B) 0.04% (C) 0.1% (D) 0.03%
42. Pyloric valve is present in the  
 (A) Heart (B) Liver (C) Stomach (D) Intestine
43. Which of the following pairs of sugars gives same osazone?  
 (A) Glucose and mannose (B) Glucose and fructose  
 (C) Fructose and mannose (D) All of the above
44. pH of honey is  
 (A) 2.3-2.9 (B) 3.2-4.2 (C) 5.6-6.9 (D) 7.0-8.1
45. Chalky bread is caused by  
 (A) Endomycopsis fibuligera (B) Trichosporon variable  
 (C) Bacillus subtilis (D) Both (A) and (B)
46. Which fatty acid helps in the improvement of vision?  
 (A) DHA (B) EPA (C) Linoleic acid (D) Stearic acid



57. In coffee fermentation microorganism involved is  
 (A) *Lactobacillus brevis* (B) *Leuconostoc mesenteroids*  
 (C) *Lactobacillus plantanim* (D) All of the above
58. Sake is a  
 (A) Beer made from wheat (B) Low calorie beer  
 (C) Yellow rice beer (D) None of the above
59. Distilled wines are  
 (A) Whisky (B) Brandy (C) Beer (D) Rum
60. The Force involved in crushers is  
 (A) Impact force (B) Compression  
 (C) Attrition (D) Pseudo force
61. Screening method depends primarily on  
 (A) Surface area of the particle (B) Specific gravity of the particles  
 (C) Magnetic property of the particles (D) Size of the particles
62. Operating speed of ball mill must be less than  
 (A) Critical speed (B) Centrifugal speed  
 (C) Operating speed (D) Normal speed
63. The part of the digestive system where no digestion takes place is  
 (A) mouth (B) oesophagus (C) ileum (D) stomach
64. The work required for crushing material is proportional to the logarithm of the ratio between initial and final diameters. This is the statement of  
 (A) Rittingers law (B) Kinks law (C) Bonds law (D) Boyles law
65. The vacuum filters are limited to maximum filtering pressure of  
 (A) One (B) Two (C) Three (D) Five
66. Washing of filter presses are generally  
 (A) Simple washing (B) Thorough washing  
 (C) Partial washing (D) Chemical washing



67. Baffles are used to
- (A) To improve rate of mixing (B) To minimize vortex formation  
 (C) Both (A) and (B) (D) Neither (A) or (B)
68. The ribbon blender mix solids by
- (A) Centrifugation (B) Mechanical shuffling  
 (C) Electrical shuffling (D) Sedimentation
69. For the laminar flow, the Reynolds number should be less than
- (A) 2100 (B) 3100 (C) 4100 (D) 5100
70. In boiling point diagram, the saturated vapor curve is called
- (A) Triple point (B) Boiling point  
 (C) Dew point (D) Saturation point
71. The moisture content in excess to equilibrium moisture content is called
- (A) Saturated moisture (B) Free moisture  
 (C) Specific moisture content (D) None of the above
72. The lethal rate is reciprocal of
- (A) Z- value (B) Thermal death Time  
 (C) F-Value (D) None of the above
73. Pressurized packed foods are called
- (A) Barofoods (B) Aerosols (C) Aceituno (D) Barges
74. Propionates are effective against
- (A) Bacteria (B) Algae  
 (C) Fungi (D) All organisms
75. Hurdle technology consists of
- (A) Mixture of different ingredients to form a uniform quality product  
 (B) Mixture of different preservation techniques  
 (C) Using irradiation for increasing shelf life  
 (D) None of the above

76. How many ATP is gained from the  $\alpha$  oxidation of one molecule of C 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  $\beta$  oxidation of fatty acid is  
 (A) Pyruvic acid (B) Acetyl 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 B<sub>6</sub> (B) Vitamin B<sub>1</sub> (C) Vitamin B<sub>2</sub> (D) Vitamin B<sub>12</sub>
81. When pantoic acid degrades under acidic conditions, the product formed is  
 (A)  $\beta$  tocopherol (B)  $\beta$  alanine  
 (C)  $\beta$  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 B<sub>1</sub> (C) Vitamin C (D) Vitamin A
84. \_\_\_\_\_ is the component of CoA  
 (A) Vitamin K (B) Thiamin  
 (C) Pantoic acid (D) Biotin
85. 2 methyl- 1,4- naphthoquinone is the integral structure of vitamin  
 (A) A (B) B<sub>2</sub> (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<sub>2</sub> 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 ATPs 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) None
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 75 cm 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 circumstance?
- (A) H<sub>2</sub> 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. Which of the following clinical situations should in 1.0 g 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
-