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) *Staphylococcus aureus*
   (B) *Clostridium botulinum*
   (C) *Cl. Sporogens*
   (D) *Bacillus stearothermophilus*

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/ divenly- benzene
   (C) Polyacrolein/ iron sulphate particles
   (D) Dynabeads
9. Chaitin assay is used for the determination of
   (A) Bacteria
   (C) Algae
   (B) Molds and yeasts
   (D) Protozoans

10. Microscopic and electronic method is expressed in terms of
    (A) Numer of cell/ml
    (C) Optical density
    (B) C.f.u/ml
    (D) None of the above

11. Coconut extract agar detects
    (A) Aflatoxin
    (C) Penicillin
    (B) Ochratoxin
    (D) Calcitonin

12. Maltodextrin have DE value
    (A) Less than 5
    (C) Less than 20
    (B) Less than 50
    (D) More than 50

13. If buffers are present The rate of browning reaction
    (A) Decreases
    (C) Remains constant
    (B) Increases
    (D) Cannot be predicted

14. In hard water, which of the following salts is/are present
    (A) Sodium chloride
    (C) Magnesium sulphate
    (B) Sodium bicarbonate
    (D) All of the above

15. Millard reaction is favored in more
    (A) Acidic conditions
    (C) Neutral conditions
    (B) Alkaline conditions
    (D) It is pH independent

16. End product of Maillard reaction is
    (A) Melanin
    (C) Carmel
    (B) Melanoidins
    (D) All the above

17. Agar seems to decrease its gel strength when pH changes towards
    (A) Acidity
    (C) Neutrality
    (B) Alkalinity
    (D) It is independent of pH

18. The product of enzymic browning is
    (A) Melanin
    (C) Caramel
    (B) Melanoidins
    (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 of the following process is responsible for the staling of bread
   (A) Gelatinization
   (B) Retrogradation
   (C) Hydrolysis of starch
   (D) All the above

21. Alginites have
   (A) Galactouronic acid and glucouronic acid
   (B) Galactouronic acid and mannonuronic acid
   (C) Glucouronic acid and mannonuronic acid
   (D) Galactouronic acid, glucouronic acid and mannonuronic 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) Microbiolofica 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 amylase and less amylopectin
   (C) Both amylose and amylopectin in equal amount
   (D) None of the above

26. Saponification 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) Butylated hydroxyl hydrazine
   (C) Butylated hydroxyl anisole
   (D) All the above

32. Isotachophorosis 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, adsoprtion 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 crystallinization
   (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 kjeldhal's 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) Glycine
   (C) Phonyllalanine             (D) Methinine

54. Which of the following is the primary bile acid
   (A) Cholic acid                (B) Hydrocholoric 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
(C) Acetyl coenzyme
(B) Stearic acid
(D) Choline

57. The enzymes for lipid biosynthesis is present in
(A) Mitochondria
(C) Endoplasmic reticulum
(B) Nucleus
(D) Lysosome

58. Fructose is converted to fructose-1-phosphate by the action of enzymes
(A) Fructokinase
(C) Fructophosphatase
(B) Hexokinase
(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
(C) Autotrophs
(B) Sulphur bacteria
(D) Purple-sulphur bacteria

62. Amoeba feeds with the help of ____________
(A) Tentacles
(C) Food vacuole
(B) Pseudopodia
(D) None of the above

63. An example of higher plant parasite is ____________
(A) Pythium
(C) Agaricus
(B) Phytophthora
(D) Cuscuta.

64. In cytochrome, the electron are picked up and released by
(A) Iron
(C) Copper
(B) Molybdenum
(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, Km 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 $\alpha$ 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 $\beta$ oxidation of fatty acid is
   (A) Pyruvic acid  (B) Actyl 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 $B_6$  (B) Vitamin $B_1$
   (C) Vitamin $B_2$  (D) Vitamin $B_{12}$

81. When pantathionic 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 $B_1$
   (C) Vitamin C  (D) Vitamin A

84. ________ is the component of CoA
   (A) Vitamin K  (B) Thiamin
   (C) Pantathionic acid  (D) Biotin

85. 2 Methyl-1,4- napthaquinone is the integral structure of vitamin
   (A) A  (B) 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 in circumstances?
(A) H2 Receptor Antagonists
(B) Proton pump inhibitors
(C) Fluoroquinolones
(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.