INSTRUCTIONS TO CANDIDATES

1. Within 30 minutes of the issue of the Question Booklet, check the Question Booklet to ensure that it contains all the pages in correct sequence and that no page/question is missing. In case of faulty Question Booklet, bring it to the notice of the Superintendent/Invigilator immediately to obtain a fresh Question Booklet.

2. Do not bring any loose paper, writing or blank in the examination hall except the admit card.

3. A separate OMR Answer Sheet is given. It should not be folded or mutilated. A second OMR Answer Sheet shall not be provided. Only one OMR Answer Sheet will be evaluated.

4. Write all entries by blue/black pen in the space provided above.

5. On the front page of the OMR Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, write the Question Booklet Number, Centre Code No. and the Set Number wherever applicable in appropriate places.

6. No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR Answer sheet and Roll No. and OMR Answer sheet no. on the Question Booklet.

7. Any change in the aforesaid entries is to be verified by the invigilator, otherwise it will be taken as unfair means.

8. Each question in this Booklet is followed by four alternative answers. For each question, you are to record the correct option on the Answer Sheet by darkening the appropriate circle in the corresponding row of the Answer Sheet, as mentioned in the guidelines given on the first page of the OMR Answer Sheet.

9. For each question, darken only one circle on the OMR Answer Sheet. If you darken more than one circle or darken a partially closed circle, the answer will be treated as incorrect.

10. Note that the answer once filled in ink cannot be changed. If you do not wish to attempt a question, leave all the circles in the corresponding row blank (such question will be awarded zero mark).

11. Through this booklet, use the inner back page of the title cover and the blank page at the end of this Booklet.

12. On completion of the test, the candidate must hand over the OMR Answer Sheet to the Invigilator in the examination room hall. However candidates are allowed to take away Test Booklet and copies of OMR Answer Sheet with them.

13. Candidates are not permitted to leave the Examination Hall until the end of the Test.

14. Any candidate attempting to use any unfair means, shall be liable to be punished as per the Act.
ROUGH WORK
रफ कार्य
No. of Questions : 120

Time : 2 Hours] [Full Marks : 360

Note : (i) Attempt as many questions as you can. Each question carries 3 (Three) marks. One mark will be deducted for each incorrect answer. Zero mark will be awarded for each unattempted question.

(ii) If more than one alternative answers seem to be approximate to the correct answer, choose the closest one.

1. The cheaper materials added to food items for more profit are called

   (1) Adulterants        (2) Drugs

   (3) Both of these      (4) None of these

2. The organisms who can synthesize their own food are termed as

   (1) Autotrophic       (2) Heterotrophic

   (3) Chemoautotrophic  (4) Chemoheterotrophic

3. The organisms obtain their nutrients from dead and decaying organic materials are known as

   (1) Parasitic         (2) Saprophytic

   (3) Heterotrophic     (4) Autotrophic

   (1)
4. Relationship between EMC and RH for biological materials has been given by
   (1) Perry       (2) Rankine     (3) Janssen     (4) Henderson

5. If the moisture content of a food product on wet basis is 50.76%, its moisture content on dry basis will be
   (1) 33.67%     (2) 103.09%   (3) 150.76%   (4) 49.24%

6. The amount of heat required to raise the temperature of 1 g of milk by 1°C in comparison to water is
   (1) 85%      (2) 93%      (3) 107%      (4) The same

7. Consider a spherical object having a volume of 1000 cc. The object is broken down into smaller particles of about 1 mm size. The storage requirement of the comminuted material in cc will be about
   (1) 1000 cc   (2) 800 cc    (3) 1200 cc    (4) 1400 cc

8. A dimensionless ratio of convective heat transfer to conduction heat transfer within a solid is known as
   (1) Nusselt number       (2) Prandtl number
   (3) Lewis number         (4) Biot number

9. Particle density of an agricultural produce is 1.95 g/cc. The porosity of the bulk is 36%. The bulk density of the produce is
   (1) 1.00      (2) 1.25      (3) 1.50      (4) 1.75
   (Continued)
10. Air at 40 °C and 50 % RH has a wet bulb depression of 10 °C. If the relative humidity decreases to 40 %, the wet bulb depression will

(1) Increase  (2) Decrease  
(3) Remain constant  (4) Follow no definite trend

11. Decimal reduction time in microbial destruction is inversely proportional to

(1) Z-value  (2) Universal gas constant  
(3) Initial concentration  (4) Reaction rate

12. Which among the following is present more in cow milk as compared to buffalo milk

(1) Fat  (2) Carotene  (3) Minerals  (4) Sugar

13. As pressure is reduced, the latent heat value

(1) Increases  (2) Decreases  
(3) Remains the same  (4) None of these

14. The energy required in grinding large solid particles is inversely proportional to the function of

(1) Diameter  (2) Density  
(3) Strength  (4) Shape
15. Essential oil obtained from tulsi is called
   (1) Oil of basil       (2) Oil of essence
   (3) Oil of olive      (4) Essential oil

16. For drying, fruits and vegetables are sliced for increasing
   (1) Temperature       (2) Humidity
   (3) Surface area      (4) None of above

17. Yoghurt contains useful
   (1) Bacteria          (2) Virus
   (3) Yeast             (4) Spores

18. Redness in apple is due to
   (1) Anthocyanin       (2) Lycopene
   (3) Carotene          (4) Xanthophylls

19. Wax coating treatment enhances the shelf-life of fruits because it blocks
   (1) Transpiration     (2) Respiration
   (3) Ripening process  (4) None of these

20. The yellow colour in onion is due to the pigment
   (1) Anthocyanin       (2) Quercetin  (3) Lycopene  (4) Carotene

   (4) (Continued)
21. Which one of the following is ethylene absorbent?

(1) KCl  (2) KMnO₄  (3) KNO₃  (4) K₂SO₄

22. Fruits which show a rise in respiration rate during the ripening process are called

(1) Climacteric  (2) Non-climacteric
(3) Parthenocarpic  (4) Parthenogenetic

23. The yellow pigment in papaya fruit is

(1) Carotene  (2) Xanthophylls
(3) Anthocyanin  (4) Caricaxanthin

24. Fruit stored in cold chamber exhibits longer life because

(1) The rate of respiration decreases
(2) There is an increase in humidity
(3) Exposure to sunlight is prevented
(4) CO₂ concentration in the environment is increased

25. Pungency in chilli is due to the presence of

(1) Capsaicin  (2) Sulphur
(3) Amides  (4) Magnesium

(Turn Over)
26. Which of the following fruit contains the highest amount of ascorbic acid?

(1) Indian Gooseberry  (2) Mango
(3) Apple  (4) Orange

27. Which one of the following is a richest source of vitamin A?

(1) Ripe mango fruit  (2) Carrot root
(3) Ripe papaya fruit  (4) Ripe tomato fruit

28. The plant growth hormone which helps in enlarging the grape berries is:

(1) Ascorbic acid  (2) Gibberellic acid
(3) Cytokinins  (4) Ethylene

29. Which of the following is commonly used as preservative in the preparation of tomato ketchup?

(1) Potassium metabisulphite  (2) Sodium benzoate
(3) Sodium metabisulphite  (4) Citric acid

30. Which one of the following is a method of long term preservation of fruits and vegetables?

(1) Pasteurization  (2) Blanching
(3) Refrigeration  (4) Drying

(Continued)
31. Yellow coloured fruits and vegetables are rich sources of
   (1) Vitamin E   (2) Vitamin C   (3) Vitamin A   (4) Vitamin B

32. Refractometer is used to determine
   (1) Minerals   (2) TSS   (3) Vitamins   (4) Protein

33. Central Food Technological Research Institute is located at
   (1) New Delhi   (2) Mysore   (3) Bangalore   (4) Hyderabad

34. The edible part of pomegranate is
   (1) Thalamus   (2) Mesocarp   (3) Endocarp   (4) Aril

35. Which of the following is the richest source of iron?
   (1) Parsley   (2) Spinach   (3) Celery   (4) Green peas

36. An ideal fruit for making jelly should be rich in
   (1) Pectin and sugars   (2) Acids and proteins
   (3) Sugars and acids   (4) Pectin and acids

37. A cyclone separator is used for separating
   (1) Particles from liquids   (2) Liquid droplets from gases
   (3) Fine particles from solids   (4) All of the above

   (7) (Turn Over)
38. In single effect evaporator the economy is

(1) Equal to 1
(2) Greater than 1
(3) Less than 1
(4) Less than or equal to 1

39. The most commonly used fumigant for storage of cereals is

(1) Zinc phosphide
(2) Ethylene dibromide
(3) Aluminium phosphide
(4) DDT

40. Extraction of soluble constituents from a solid by means of solvent is known as

(1) Distillation
(2) Leaching
(3) Evaporation
(4) Sublimation

41. Addition of salt to ice will

(1) Increase the temperature of the mixture
(2) Decrease the temperature of the mixture
(3) Not alter the temperature of the mixture
(4) Do nothing of the type said earlier

(Continued)
42. The first law of thermodynamics is a special case of

(1) Newton's law

(2) Law of conservation of energy

(3) Charle's law

(4) The laws of heat exchange

43. Pascal is a unit of

(1) Displacement

(2) Temperature

(3) Pressure

(4) Viscosity

44. A pyrometer is used to measure

(1) Temperature

(2) Pressure

(3) Humidity

(4) Displacement

45. One ton of refrigeration is equivalent to

(1) 50 kcal/min

(2) 100 kcal/min

(3) 150 kcal/min

(4) 200 kcal/min

46. The boiling point of milk in degree Celsius is

(1) 99.5

(2) 100.17

(3) 99

(4) 101

(Turn Over)
47. Dielectric constant of a food material depends upon

(1) Temperature       (2) Moisture content
(3) Density           (4) Electrical conductivity

48. A boy has 240 grams of water at 50 °C. The number of grams of ice at 0 °C which he must add to the water to lower the water temperature to 0 °C is

(1) 135       (2) 150       (3) 120       (4) 175

49. Which one of the following is deficient in milk?

(1) Iron       (2) Calcium    (3) Phosphorous (4) Lactose

50. Headquarters of the Food and Agriculture Organization is located at

(1) Geneva      (2) New Delhi  (3) Rome     (4) New York

51. The antisterility vitamin is

(1) Vitamin A    (2) Vitamin B  (3) Vitamin E  (4) Vitamin D

52. Which of the following sugars is sweetest?

(1) Galactose    (2) Glucose     (3) Fructose   (4) Sucrose

53. Zero energy cool chambers operate on the principle of

(1) Second law of thermodynamics  (2) Evaporative cooling
(3) Boyle's law                (4) Charle's law

(Continued)
54. Which one of the following fruit, grown in semi-wild form in wasteland of peninsular India, is one of the largest foreign exchange earners?

(1) Coconut  (2) Mango  (3) Cashew  (4) Banana

55. Site of protein synthesis in a cell is

(1) Ribosomes  (2) Endoplasmic reticulum
(3) Chloroplasts  (4) Mitochondria

56. Who discovered X-ray first?

(1) Wilson  (2) Roentgen  (3) Benzer  (4) Muller

57. Aflatoxins are produced by

(1) Yeast  (2) Bacteria  (3) Molds  (4) Nematodes

58. Pungency in onion is due to the presence of

(1) Allyl propyl disulphide  (2) Diallyl disulphide
(3) Isothiocynate  (4) Capsaicin

59. Which of the following is not a bio-pesticide?

(1) Bioneem  (2) Biolep  (3) Dipel  (4) Carbaryl

(Turn Over)
60. Which of the following is a phenolic factor present in onion having anti-fungal properties?

(1) Quercetin  (2) Catechol
(3) Sinigrin  (4) Allyl propyl disulphide

61. Major pest of potato during storage is

(1) Cut worms  (2) Aphids
(3) Jassids  (4) Potato tuber moth

62. Which vitamin is called coagulating vitamin?

(1) Vitamin A  (2) Vitamin E  (3) Vitamin K  (4) Vitamin C

63. The pest which attack the pulses both in fields and at storage

(1) Pulse beetle  (2) Gram pod borer
(3) Red gram pod fly  (4) Pod borer

64. Which of the following cannot synthesize protein by own enzymes?

(1) Bacteria  (2) Mycoplasma
(3) RLO  (4) Virus

65. Mad cow disease is caused by

(1) Virion  (2) Prion  (3) Bacteria  (4) MLV
(12) (Continued)
66. Which one of the following cannot be detected by ELISA technique?

(1) Virus (2) Bacteria (3) Viroid (4) Fungus

67. The strongest bond is

(1) Ionic bond (2) Covalent bond
(3) Hydrogen bond (4) van der Waals

68. Latent heat of fusion (ice to water) is

(1) 540 cal (2) 620 cal (3) 80 cal (4) 40 cal

69. Which of the following is deficient in rice grain?

(1) Lysine (2) Glycine (3) Isoleucine (4) Alanine

70. Wavelength of visible light is

(1) 260-350 nm (2) 360-760 nm (3) 390-700 nm (4) 400-700 nm

71. Most dangerous gas for depletion of ozone layer is

(1) Chlorine (2) CFC (3) Benzene (4) CO₂

72. Among the following which has antioxidant property

(1) Quinones (2) Tocopherols (3) Phenols (4) Sorbitols
73. The end product of glycolysis is
   (1) Glucose       (2) Sucrose       (3) Pyruvic acid   (4) NADH

74. Krebs cycle produces theoretical yield of
   (1) 18 ATP       (2) 38 ATP       (3) 32 ATP         (4) 36 ATP

75. Cellulose is a polymer of
   (1) β-D Glucose   (2) α-D Glucose   (3) β-L Fructose   (4) α-D Galactose

76. Greenhouse gas for global warming is
   (1) O₂           (2) CH₄           (3) SO₂            (4) CO₂

77. Unit of pressure in SI system is
   (1) Atmosphere   (2) Dynes per square cm
                 (3) Pascal         (4) mm of mercury

78. Coconut fat is a rich source of
   (1) Palmitic acid (2) Stearic acid
   (3) Lauric acid  (4) Ricinoleic acid

(Continued)
79. Temperature of LTLT pasteurization of milk is
   (1) 61-63 °C   (2) 42-49 °C   (3) 62-65 °C   (4) 51-65 °C

80. Rickets is caused due to the deficiency of
   (1) Vitamin C   (2) Vitamin D   (3) Vitamin A   (4) Vitamin B₁₂

81. Egg shell is made up of
   (1) Ca(OH)₂   (2) Ca₃(PO₄)₂   (3) CaCO₃   (4) CaO

82. Quality of egg can be judged by
   (1) Candling   (2) Annealing   (3) Temperature test   (4) pH

83. Yellow color of egg is due to
   (1) Carotene   (2) Anthocyanin   (3) Vitamin B   (4) Xanthophyll

84. Hormone required for milk secretion is
   (1) Oxytocin   (2) ACH   (3) Prolactin   (4) TSH

85. Crude fibre content in roughage is approximately
   (1) 18-20 %   (2) 30-32 %   (3) 25-27 %   (4) 35-37 %

86. Enzyme coagulated milk product is
   (1) Paneer   (2) Dahi   (3) Cheese   (4) Chhana
87. pH of fresh buffalo milk is

(1) 4.6  (2) 5.6  (3) 6.6  (4) 7.6

88. Which of the following vitamins remains most resistant on heat treatment of milk?

(1) Vitamin A  (2) Vitamin C  (3) Vitamin B₁  (4) Vitamin B₁₂

89. Estrogen, progesterone and relaxin hormones are secreted from

(1) Ovary  (2) Adrenal  (3) Pituitary  (4) Thyroid

90. Hormone secreted from pancreas that lowers down blood sugar levels is

(1) Glucagon  (2) Insulin  (3) Epinephrine  (4) Relaxin

91. Out of the total body calcium, bone and teeth have

(1) 79 %  (2) 89 %  (3) 95 %  (4) 99 %

92. Which one of the following, is not a bacterial disease?

(1) Rinderpest  (2) Haemorrhagic septicaemia

(3) Anthrax  (4) Black quarter

93. Surface adherence of gas, liquids or solids onto a solid is known as

(1) Absorption  (2) Sorption  (3) Adsorption  (4) Adhesion

(16)  (Continued)
94. Water loss from a cooked, cooled gel due to excessive retrogradation is called
(1) Viscosity  (2) Syneresis  (3) Surface tension  (4) Evaporation

95. Which of the following is a starch hydrolysis derivative that may be used to stimulate fat in emulsions?
(1) Maltodextrin  (2) Glucose  (3) Amylose  (4) Amylopectin

96. Nonenzymatic browning reactions involving a reducing sugars and a free amino acid on a protein is known as
(1) Caramelization  (2) Maillard reaction  (3) Peroxidation  (4) Deamination

97. Food processing method that converts ice to vapour without going through the liquid phase is called
(1) Freezing  (2) Chilling  (3) Freeze concentration  (4) Freeze drying

98. The ratio of the vapour pressure of water in a solution to the vapour pressure of pure water is
(1) Relative humidity  (2) Absolute humidity  (3) Humidity  (4) Water activity
99. Resistance to flow of a liquid when shear force is applied is called

(1) Viscosity          (2) Surface tension
(3) Elasticity         (4) Turbulence

100. A high molecular weight methylated galacturonic acid polymer which is insoluble in water and found in immature fruits is

(1) Pectin          (2) Pectin acid  (3) Pectic acid  (4) Protopectin

101. Process of adding back a nutrient to make up the loss during processing is called

(1) Enrichment    (2) Restoration
(3) Fortification (4) Supplementation

102. Wheat flour that is aged naturally or by chemical agents to improve baking properties of dough known as

(1) Matured flour (2) Bleached flour
(3) Hard flour    (4) Organic flour

103. The name given to a proposed new regulatory category of food components that may be considered a food or a part of a food and may supply medical or health benefits including the treatment or prevention of diseases

(1) Pharmaceuticals (2) Specialty foods
(3) Nutraceuticals (4) Drug

(Continued)
104. Pressure exerted by water filled vacuoles on the cytoplasm and the partially elastic cell wall is called

(1) Vapour pressure
(2) Cell pressure
(3) High pressure
(4) Turgor pressure

105. Movement of solute across a permeable membrane from an area of greater concentration to lesser concentration in heated products that do not have an intact cell membrane is called

(1) Permeation
(2) Osmosis
(3) Diffusion
(4) Ultrafiltration

106. Changes in conformation of proteins caused by changes in temperature, pH or ionic strength, or by surface changes is called

(1) Denaturation
(2) Deamination
(3) Decarboxylation
(4) Autooxidation

107. Characteristic of the molecule that enables it to perform a specific role in a food is known as

(1) Functional property
(2) Colligative property
(3) Special property
(4) Nutritional property
108. Which of the following contains a positively charged group and a negatively charged group within the molecule?

(1) Anion (2) Cation (3) Bi ion (4) Zwitter ion

109. Post mortem state 6 - 24 hrs after slaughter in which muscle stiffens and become less extensible and there is loss of ATP is called

(1) Scalding (2) Post rigor (3) Rigor mortis (4) Pre rigor

110. Material that allows two ordinarily immiscible substances to mix is called

(1) Chelate (2) Emulsifier (3) Stabilizer (4) Sequestrant

111. Heating of food materials for specific time that eliminates pathogens is called

(1) Sterilization (2) Pasteurization (3) Blanching (4) Upperization

112. The increase in volume of ice cream over the volume of ice cream mix is due to the

(1) Incorporation of emulsifier (2) Incorporation of fat (3) Incorporation of milk solids (4) Incorporation of air

113. Sweetened condensed milk contains sugar

(1) 40-45% (2) 30-35% (3) 20-25% (4) 10-15%

(20)
114. A lipid containing two fatty acids and a phosphoric acid group esterified to glycerol and choline as the N group is called

   (1) Diglyceride   (2) Glycolipid   (3) Lecithin   (4) Cephalin

115. A compound that prevents, delays or minimizes the rancidity of oils by donating a H atom to the double bond in a fatty acid is known as

   (1) Autooxidation   (2) Free radical
   (3) Antioxidant   (4) Peroxide

116. The process of formation of equal amounts of glucose and fructose from sucrose by acid and heat, or enzymes is called

   (1) Inversion   (2) Isomerization
   (3) Hydrolysis   (4) Fractionation

117. The process of mixing dough into a uniform mass by folding, pressing and stretching is called

   (1) Kneading   (2) Baking   (3) Beating   (4) Leavening

118. Mild heat treatment that inactivates enzymes that would cause deterioration of food during frozen storage is known as

   (1) Stewing   (2) Blanching   (3) Drying   (4) Roasting

   (21) (Turn Over)
119. A method in which continuous electrical current is passed through food to heat it rapidly and maintaining quality is called

(1) Microwave cooking  (2) Irradiation

(3) Ohmic heating  (4) Sonication

120. A method for addition of nutrients in a food to achieve established concentrations specified by the standards of identity

(1) Fortification  (2) Restoration

(3) Enrichment  (4) Supplementation
ROUGH WORK
रफ़ कार्य
(इम पुस्तिका के प्रथम आकरण पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केलेक
नीली/काली वाल-प्यावेक्ट पेपर से ही लिखिये)

1. इस पुस्तिका के लिए के 30 सितंबर के बाद ही भेज से कि प्रकाशन में अगला वर्ष के मंगल तक है और उसे यह मूल है। पुस्तिका में लिखी हुई जाने के इसकी पुस्तिका तत्काल कक्ष-विशेषक को द्वारा सम्पूर्ण प्रकाशक की प्रक्रिया समाप्त कर दिया।

2. अगस्त-साल तक प्रेम-पत्र के अतिरिक्त, लिखा गया साहित्य को ही पृष्ठ पर लिखित रूप में साळी।

3. अगस्त-साल उत्तर-पत्र के लिए निर्देश रखा, जो उत्तर-पत्र में लिखा गया। इस्तेमाल के लिए कोई और नहीं लिखा करें। इसके अलावा, उत्तर-पत्र के निर्देश रखा जाना चाहिए।

4. उसी प्रकार, इस प्रकार उत्तर-पत्र निर्देश और साबित किया जायेगा।

5. अगस्त-साल तक प्राप्त करने के लिए अनुक्रमणिका की विशेषता निर्देश करने जा रहा है। इसके अलावा, उत्तर-पत्र को प्रकाशक द्वारा पंडित निर्देश में उपस्थित रखा करें।

6. अगस्त-साल उत्तर-पत्र के अनुक्रमणिका संख्या, प्राप्ति-पुस्तिका प्राप्ति व चौथे रेखा को दिखाए। तथा उत्तर-पत्र में अनुक्रमणिका संख्या और अगस्त-साल उत्तर-पत्र संख्या को प्रक्रियाक्रम में उपस्थित रखा करें।

7. इस प्रकार, प्रक्रिया में कोई भी निर्देश को निर्देश नहीं दिखाए। इससे अनुक्रमणिका न करें।

8. इस प्रकार, प्रकरण के चरण चाल ही पृष्ठ को भाग करें। एक से अन्ततः पृष्ठ को भाग करने पर अधिक वहाँ भाग को अपनी पहले पहल भाग पर उत्तर देना माना जायेगा।

9. चरण में कि यह चरण रूपांतरित उत्तर माना जाये नहीं का लक्षित नहीं है। किन्तु इसी प्रकार उत्तर का उत्तर जाने का रूपांतरण होगा, तो सम्भावित रूपांतरण के लिए लिखे गए उत्तरों के उत्तर उत्तर पर लिखे गये निर्देशों के अनुसार भेजे गए हैं।

10. इस प्रकार, उत्तर-पत्र पर प्रक्रिया के पुस्तक से भाग भाग करने पर अंतिम दल की आत्मा भरे पर उत्तर देना माना जायेगा।

11. साबित के लिए उत्तर-पुस्तिका के पुस्तक पर प्रकाशन का अंतिम दल के द्वारा साबित किया जायेगा।

12. पुस्तक की साबित के बाद अभियंता प्रकाशक की अध्यक्षता, उत्तर-पत्र पर प्रक्रिया के अंतिम दल की आत्मा भरे पर उत्तर देना माना जायेगा।

13. साबित के लिए प्रकाशक के बाद पुस्तक पर प्रकाशन का अंतिम दल के द्वारा साबित किया जायेगा।

14. इसमें की अभियंता आत्मा में अपनी प्रक्रिया का प्रयाश करके, होगा अभियंता प्रकाशक की आत्मा भरे पर उत्तर देना माना जायेगा।

15. पुस्तक की साबित के बाद प्रकाशक की अध्यक्षता आत्मा में अपनी प्रक्रिया का प्रयाश करके, होगा पुस्तिका का प्रकाशन की आत्मा भरे पर उत्तर देना माना जायेगा।