Total No. of Printed Pages : 21

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU ARE ASKED TO DO SO)

A

SET-Y

Ph.D./URS-EE-Jan-2022

SUBJECT : Food Technology

10005

Sr. No. .....

Time : **1¼ Hours** Max. Marks : **100** Total Questions : **100**

Roll No. (in figures)_____ (in words) _____

Name _____ Father's Name_____

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1. The application of filter(s) in the image analysis is :

   (1) to remove unwanted noise

   (2) to sharpen the edges of objects

   (3) Both above

   (4) None of the above

2. With most modern equipment, ... gray levels are available.

   (1) 255 (2) 256

   (3) 251 (4) 225

3. In a typical image having dimensions of 512 pixels X 512 pixels, each pixel has an integer value ranging :

   (1) From 100 to 1000 (2) From 0 to 100

   (3) From 0 to 255 (4) From 0 to 521

4. In binarization, the original gray level image is changed from a continuum of :

   (1) Colours or gray levels into a black and white image

   (2) Black and white levels into a colour image

   (3) Black level into a colour image

   (4) White level into a colour image

5. The mechanism of elastic can be described by :

   (1) Einstein theory (2) Rubber elasticity theory

   (3) Plastic resilience system (4) None of the above

6. The ability of *two* materials to resist separation after their surfaces come into contact is known as :

(1) Cohesion
(2) Tack
(3) Adhesion
(4) Stickiness

7. Low values for the surface energy of the solid means :

(1) Low adhesion
(2) High adhesion
(3) Low cohesion
(4) High cohesion

8. Differential Scanning Calorimetry is a technique to measure :

(1) Electrical conductivity
(2) Impact energy
(3) Thermal expansion
(4) Specific heat

9. Kind of electron microscope which is used to study internal structure of cells is :

(1) scanning electron microscope
(2) transmission electron microscope
(3) light microscope
(4) compound microscope

10. Electrons of Scanning Electron Microscope are reflected through :

(1) glass funnel
(2) specimen
(3) metal-coated surfaces
(4) vacuum chamber

11. ISO 9001:2008 is an update of an earlier ISO :

(1) ISO 9000:2005 (2) ISO 9001:2000

(3) ISO 9000:2000 (4) ISO 9004:2000

12. The eight quality management principles are defined in :

(1) ISO 9000:2000 (2) ISO 9004:2000

(3) ISO 9000:2005 (4) Both (1) & (2)

13. The primary function of a QA department is to provide confidence for ?

(1) Supplier (2) Retailer

(3) Management and Consumer (4) Wholesaler

14. Good manufacturing practice means understanding, analyzing and controlling the :

(1) The manufacturing process (2) Laboratory

(3) Distribution of food (4) None of the above

15. What is the purpose of FSMS (Food Safety Management System) ?

(1) To ensure the storage, distribution and sale of safe food.

(2) To ensure the manufacture, distribution and sale of safe food.

(3) To ensure the manufacture, storage and sale of safe food.

(4) To ensure the manufacture, storage, distribution and sale of safe food.

16. Molecular sieves are regenerated by heating to :

(1) <150°C (2) >500°C

(3) 200-330°C (4) >1000°C

17. According to Poiseuille's law, the permeability for gas flow through a capillary is proportional to (μ =gas viscosity) :

(1) μ (2) $1/\mu$

(3) $\sqrt{\mu}$ (4) μ^2

18. 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) 1.10 (2) 1.25

(3) 1.75 (4) 1.85

19. The ratio between apertures in consecutive screen in Tyler series is :

(1) 2 (2) $2^{1/2}$

(3) $2^{1/4}$ (4) Both (2) and (3)

20. Angle of nip is formed by the :

(1) particle to be ground with the roll

(2) tangents to the roll faces at the point of contact between a particle and rolls

(3) heap of material in free fall to the rolls

(4) None of these

21. 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 :

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22. Which one is a faster method for separating solid particles from a mixture of solids ?

(1) Aspiration
(2) Cyclone separation
(3) Centrifugal separation
(4) Fluidization

23. The higher values of angle of internal friction indicate that the material is :

(1) Cohesive
(2) Easy flowing
(3) Free flowing
(4) None of these

24. The differential speed of rolls used in wheat mill is :

(1) 1.5 : 1
(2) 2.5 : 1
(3) 4.5 : 1
(4) 3.5 : 1

25. Which of the following law is used to predict energy requirement for grinding a material ?

(1) Raoult's law
(2) Newton's law
(3) Kick's law
(4) Stoke's law

26. Moisture content of wheat on dry basis is 25%, what will be on wet basis ?

(1) 20%
(2) 28%
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27. Watson law, which gives a relationship between the concentration of bactericide 'C' and the time necessary to accomplish a standard destruction, is given by :

(1) $Ct = constant$
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28. Transmittance properties of food material are used to indicate :

(1) Extent of processing in biscuits

(2) Core defects in fruits

(3) Bruised fruits

(4) All of these

29. During the discharge of the solids of bins and hoppers, the angle comes into play is :

(1) angle of friction

(2) dynamic angle of friction

(3) angle of repose

(4) angle of rotation

30. Dielectric constant of a food material depends upon :

(1) Temperature

(2) Moisture content

(3) Density

(4) Electrical conductivity

31. Plank's equation describing freezing of food was derived from a few assumptions and the following was ***not*** one of these assumptions :

(1) Pseudo-steady state condition

(2) A definite freezing point

(3) Freezing starts at the freezing point

(4) None of the above

32. Temperature commonly used for air freezing is :

(1) –23°C to –30°C

(2) –180C to –40°C

(3) –40°C to –42°C

(4) 23°C to 30°C

33. Coefficient of performance of a refrigerator is given by :

(1) Heat removed by the evaporator divided by the heat rejected by the condenser

(2) Heat removed by the evaporator divided by the compressor work

(3) Heat rejected by the condenser divided by compressor work

(4) None of the above

34. Pick out the correct relationship between Ri (internal reflux ratio) and Ro (external reflux ratio) :

(1) (1+Ro)=Ro/Ri

(2) (1–Ro)=Ro/Ri

(3) (1+Ro)=Ro/Ri

(4) (1–Ri)=Ro/Ri

35. In case of gases, the binary diffusivity is proportional to (where p=pressure) :

(1) p

(2) 1/p

(3) $1/\sqrt{p}$

(4) $\sqrt{p}$

36. In extraction, as the temperature increases, the area of heterogeneity (area covered by binodal curve) :

(1) Decreases

(2) Increases

(3) Remain unchanged

(4) None of these

37. Azeotropic distillation is employed to separate :

(1) Constant boiling mixture

(2) High boiling mixture

(3) Mixture with very high relative volatility

(4) Heat sensitive materials

38. The non-dimensional number of mass transfer which is function of Prandtl number and Schmidt number is :

(1) Sherwood number
(2) Lewis number
(3) Nusselt number
(4) Grates number

39. In which model, monolayer value comes into function :

(1) BET model
(2) Kelvin model
(3) GAB model
(4) Henderson model

40. Constant rate of drying is directly proportional to :

(1) Convective heat transfer coefficient
(2) Latent heat of vaporization
(3) Wet bulb temperature
(4) None of the above

41. Infrared wavelength is represented by which of the following ?

(1) 10^{-4} cm
(2) 10^{-5} cm
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42. Which of the following methods can't be used to calculate thermal process time ?

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(3) $\log \frac{t_0}{t_T} = -\frac{T - T_0}{Z}$ (4) All of these

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(1) Efficiency (2) Effectiveness

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50. The monod model predicts that the specific growth rate :

(1) will decrease with the conc. of the growth limiting substrate

(2) will increase with the conc. of the growth limiting substrate until it reaches a maximum value

(3) will increase with the conc. of the growth limiting substrate

(4) does not depend on growth limiting substrate

51. Which one of the following cannot be the unit of convective heat transfer coefficient ?

(1) $W/m^2.K$ (2) $kW/m^2.K$

(3) $Btu/ft^3.h.°C$ (4) $kcal/m^2.h.°C$

52. The emissive power of a body depends on :

(1) Nature of body
(2) Physical nature
(3) Temperature of body
(4) All of the above

53. Licensing and registering authority have the power to ..... .

(1) Registration
(2) Licensing
(3) Cancellation of License
(4) All of the above

54. The Global Food Safety Initiative was created by the :

(1) Food and Drug Administration
(2) British Retail Consortium (BRC)
(3) Global Food Business Forum
(4) World Health Organization (WHO)

55. In a concentric double pipe heat exchanger one fluid undergoes phase change :

(1) Two fluids should opposite to each other
(2) Two fluids should flow parallel to each other
(3) Two fluids should flow normal to each other
(4) The direction of flow of the two fluids are of no consequences

56. For a perfectly black body :

(1) $\alpha = 1, \varepsilon = 0, \tau = 0$
(2) $\alpha = \varepsilon = 0, P = 1$
(3) $\alpha = \tau = 0, \varepsilon = 1$
(4) None of these

57. For laminar flow (in flow inside pipes) Sherwood number shows the same trends as :

(1) Nusselt number
(2) Reynolds number
(3) Stanton number
(4) Prandtl number

58. Effect of temperature on the reaction rate is given by :

(1) Arrhenius equation
(2) Gibbs Helmholtz equation
(3) Kirchoff's law
(4) None of the above

59. Which of the following is ***true*** about ISO 2002 method for Salmonella detection ?

(1) Selenite cystine (SC) broth is replaced by Muller Kauffmann tetrathionate novobiocin broth (MKTTn)
(2) Rappaport Vassiliadis (RV) broth has been replaced by Rappaport Vassiliadis Soya (RVS broth
(3) XLD is the first isolation medium rather than BGA
(4) All of these

60. What are the intrinsic factors for the microbial growth ?

(1) pH
(2) Moisture
(3) Oxidation-Reduction Potential
(4) All of these

61. Among the following which group of fat is unsaturated ?

(1) Oleic, Linoleic
(2) Butyric, Lauric
(3) Caproic, Butyric
(4) Styrene, Lauric

62. When vapor pressure of water at surface is more than vapor pressure of atmosphere :

(1) Water starts boiling
(2) Water escapes
(3) No effect
(4) None of the above

63. Which is major phenol substrate for phenolase action in enzymatic browning reaction ?

(1) Caffeic acid
(2) Chlorogenic acid
(3) Phenol oxidase
(4) Tyrosine

64. Phenomenon of osmosis causes ..... of true liquid separated by chemical membrane.

(1) Change in relative density
(2) Change in specific gravity
(3) Change in relative volume
(4) Change in relative viscosity

65. A liquid freeze when its vapor pressure is equal to :

(1) Vapor pressure of solid
(2) Vapor pressure of atmosphere
(3) Vapor pressure of liquid
(4) None of the above

66. The final browning pigment of enzymatic browning reaction is :

(1) Melanin
(2) O-diphenol
(3) Orthoquinone
(4) Caffeic acid

67. Water activity of the solution having low solute concentration can be obtained from :

(1) $a_w = X_w$

(2) $a_w = LN\ X_w$

(3) $LN_{aw} = X_w$

(4) $a_w = 1/X_w$

68. Water can be best described as :

(1) Pseudoplastic, Thixotropic

(2) Dilatent, Rheopectic

(3) Dilatent, Pseudoplastic

(4) Newtonian

69. Freeze burn is a defect which generally occurs in frozen foods due to :

(1) Dehydration

(2) Osmosis

(3) Thermal conductivity

(4) Rehydration

70. Most commonly used material for microwave oven packaging is made up of :

(1) Wood

(2) Paper

(3) Plastic

(4) Aluminum foil

71. A keto acid involved in carbohydrate metabolism is :

(1) Citric acid

(2) Pyruvic acid

(3) Succinic acid

(4) Tricarboxylic acid

72. Carbohydrate free human diet leads to :

(1) Addition's disease

(2) Hyper adrenalism

(3) Hypothyroidism

(4) Ketosis

73. The most common simple proteins which act as reserve proteins in plants are :

(1) Albumins
(2) Globulins
(3) Glutelins
(4) Prolamins

74. The parts of the body protein that can be replaced by 100 parts of the protein fed in the test is known as :

(1) Biological value
(2) Chemical score
(3) Digestibility coefficient
(4) Protein Efficiency Ratio

75. Riboflavin is rapidly destroyed in :

(1) Acid medium
(2) Alkaline medium
(3) Neutral medium
(4) All the above

76. Consumption of raw eggs by adults may lead to :

(1) Biotin deficiency
(2) Calcium deficiency
(3) Folic acid deficiency
(4) Phosphorus deficiency

77. Monosaccharides constituting lactose are :

(1) Galactose-galactose

(2) Galactose-glucose

(3) Glucose-glucose

(4) Glucose-fructose

78. Differential speed ratio of the pairs of break rolls of Buhler mill is :

(1) 3 : 1

(2) 2.5 : 1

(3) 1.5 : 1

(4) 1 : 1

79. One refrigeration ton is equivalent to :

(1) 1000 kg/day

(2) 1000 Btu/day

(3) 12000 kg/hour

(4) 12000 Btu/hour

80. Cleaning of cereals by aspiration is based on :

(1) Aerodynamic properties

(2) Hydrodynamic properties

(3) Magnetic properties

(4) Thermal properties

81. Alcohol ppt. test determines :

(1) Adulteration of milk

(2) Percentage of fat in milk

(3) Milk acidity

(4) Heat stability of milk

82. Food that exhibits Newtonian flow behaviour best among the following is :

(1) Dairy cream (2) Fruit purees

(3) Milk (4) Protein concentrate

83. Permeability of plastic packaging films to gases is given by :

(1) Bear's law (2) Fick's law

(3) Fink's law (4) Flemming's law

84. Rate of sedimentation of particles during fruit juice clarification is governed by :

(1) Fick's law (2) Kick's law

(3) Ostwald's law (4) Stoke's law

85. Working fluid employed in heat pump cycle is :

(1) Ammonia gas (2) Freon gas

(3) Steam (4) Hot water

86. The relationship between moisture content and water activity of foods is given by :

(1) BET equation
(2) Fourier's equation
(3) Stefan's Law
(4) Plank's equation

87. The pigments responsible for the red and purple colour of fruits and vegetables are :

(1) Myoglobin
(2) Oxymyoglobin
(3) Anthocyanins
(4) Pheophytins

88. The sole pigments in vegetables such as potato and yellow skinned onion are :

(1) Myoglobin
(2) Anthocyanins
(3) Pheophytins
(4) Flavonoids

89. The delayed bitterness in oranges and grapefruits is due to :

(1) Terpene limonin
(2) Hesperidin
(3) Allicin
(4) Naringin

90. The most common flavonoid in the peels of oranges and lemons is :

(1) Terpene limonin
(2) Hesperidin
(3) Allicin
(4) Naringin

91. The characteristic odour of garlic is due to :

(1) Naringin
(2) Allicin
(3) Hesperidin
(4) Thioglucosides

92. The flavour components of the cabbage and cauliflower are due to :

(1) Naringin
(2) Allicin
(3) Hesperidin
(4) Thioglucosides

93. The formation of brown colour in fruits and vegetables when cut is due to the action of following enzyme on phenolic substances.

(1) Tyrosinase
(2) Amylase
(3) Phenolase
(4) Peroxidase

94. The enzyme which hydrolyzes sucrose into glucose and fructose is :

(1) α-amylase
(2) β-amylase
(3) Cellulase
(4) Invertase

95. The haziness noticed in fruit juices and wines can be removed using :

(1) Cellulase
(2) Pectinase
(3) Invertase
(4) α-amylase

96. The enzyme which decomposes hydrogen peroxide to water is :

(1) Cellulase
(2) Lipase
(3) Catalase
(4) α-amylase

97. The enzyme which bleaches the flour to produce a very white crumb is :

(1) Invertase
(2) Lipoxygenases
(3) Catalase
(4) Pectinase

98. A mole of non-ionizing solute in a litre of water depresses its freezing point by :

(1) 5.58°C (2) 3.72°C

(3) 2.24°C (4) 1.80°C

99. The gas used for flushing the processed and packaged food is :

(1) Hydrogen (2) Nitrogen

(3) Carbon dioxide (4) Oxygen

100. Heat conduction in glass is due to :

(1) Electromagnetic waves

(2) Elastic impact of molecules

(3) Motion of electrons

(4) Mixing motion of different layers of gas

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(2) to sharpen the edges of objects
(3) Both above
(4) None of the above

22. With most modern equipment, ... gray levels are available.

(1) 255
(2) 256
(3) 251
(4) 225

23. In a typical image having dimensions of 512 pixels X 512 pixels, each pixel has an integer value ranging :

(1) From 100 to 1000
(2) From 0 to 100
(3) From 0 to 255
(4) From 0 to 521

24. In binarization, the original gray level image is changed from a continuum of :

(1) Colours or gray levels into a black and white image
(2) Black and white levels into a colour image
(3) Black level into a colour image
(4) White level into a colour image

25. The mechanism of elastic can be described by :

(1) Einstein theory
(2) Rubber elasticity theory
(3) Plastic resilience system
(4) None of the above

26. The ability of two materials to resist separation after their surfaces come into contact is known as :

(1) Cohesion
(2) Tack
(3) Adhesion
(4) Stickiness

27. Low values for the surface energy of the solid means :

(1) Low adhesion
(2) High adhesion
(3) Low cohesion
(4) High cohesion

28. Differential Scanning Calorimetry is a technique to measure :

(1) Electrical conductivity
(2) Impact energy
(3) Thermal expansion
(4) Specific heat

29. Kind of electron microscope which is used to study internal structure of cells is :

(1) scanning electron microscope
(2) transmission electron microscope
(3) light microscope
(4) compound microscope

30. Electrons of Scanning Electron Microscope are reflected through :

(1) glass funnel
(2) specimen
(3) metal-coated surfaces
(4) vacuum chamber

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(2) Allicin
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(1) Electromagnetic waves
(2) Elastic impact of molecules
(3) Motion of electrons
(4) Mixing motion of different layers of gas

41. Among the following which group of fat is unsaturated ?

(1) Oleic, Linoleic
(2) Butyric, Lauric
(3) Caproic, Butyric
(4) Styrene, Lauric

42. When vapor pressure of water at surface is more than vapor pressure of atmosphere :

(1) Water starts boiling
(2) Water escapes
(3) No effect
(4) None of the above

43. Which is major phenol substrate for phenolase action in enzymatic browning reaction ?

(1) Caffeic acid
(2) Chlorogenic acid
(3) Phenol oxidase
(4) Tyrosine

44. Phenomenon of osmosis causes ..... of true liquid separated by chemical membrane.

(1) Change in relative density
(2) Change in specific gravity
(3) Change in relative volume
(4) Change in relative viscosity

45. A liquid freeze when its vapor pressure is equal to :

(1) Vapor pressure of solid
(2) Vapor pressure of atmosphere
(3) Vapor pressure of liquid
(4) None of the above

46. The final browning pigment of enzymatic browning reaction is :

(1) Melanin
(2) O-diphenol
(3) Orthoquinone
(4) Caffeic acid

47. Water activity of the solution having low solute concentration can be obtained from :

(1) $a_w = X_w$ (2) $a_w = LN\ X_w$

(3) $LN_{aw} = X_w$ (4) $a_w = 1/X_w$

48. Water can be best described as :

(1) Pseudoplastic, Thixotropic

(2) Dilatent, Rheopectic

(3) Dilatent, Pseudoplastic

(4) Newtonian

49. Freeze burn is a defect which generally occurs in frozen foods due to :

(1) Dehydration (2) Osmosis

(3) Thermal conductivity (4) Rehydration

50. Most commonly used material for microwave oven packaging is made up of :

(1) Wood (2) Paper

(3) Plastic (4) Aluminum foil

51. Plank's equation describing freezing of food was derived from a few assumptions and the following was *not* one of these assumptions :

(1) Pseudo-steady state condition

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(1) (1+Ro)=Ro/Ri (2) (1–Ro)=Ro/Ri

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(1) p (2) 1/p

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(1) Aerodynamic properties

(2) Hydrodynamic properties

(3) Magnetic properties

(4) Thermal properties

71. Alcohol ppt. test determines :

(1) Adulteration of milk

(2) Percentage of fat in milk

(3) Milk acidity

(4) Heat stability of milk

72. Food that exhibits Newtonian flow behaviour best among the following is :

(1) Dairy cream (2) Fruit purees

(3) Milk (4) Protein concentrate

73. Permeability of plastic packaging films to gases is given by :

(1) Bear's law (2) Fick's law

(3) Fink's law (4) Flemming's law

74. Rate of sedimentation of particles during fruit juice clarification is governed by :

(1) Fick's law (2) Kick's law

(3) Ostwald's law (4) Stoke's law

75. Working fluid employed in heat pump cycle is :

(1) Ammonia gas
(2) Freon gas
(3) Steam
(4) Hot water

76. The relationship between moisture content and water activity of foods is given by :

(1) BET equation
(2) Fourier's equation
(3) Stefan's Law
(4) Plank's equation

77. The pigments responsible for the red and purple colour of fruits and vegetables are :

(1) Myoglobin
(2) Oxymyoglobin
(3) Anthocyanins
(4) Pheophytins

78. The sole pigments in vegetables such as potato and yellow skinned onion are :

(1) Myoglobin
(2) Anthocyanins
(3) Pheophytins
(4) Flavonoids

79. The delayed bitterness in oranges and grapefruits is due to :

(1) Terpene limonin
(2) Hesperidin
(3) Allicin
(4) Naringin

80. The most common flavonoid in the peels of oranges and lemons is :

(1) Terpene limonin
(2) Hesperidin
(3) Allicin
(4) Naringin

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(1) ISO 9000:2005
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(1) The manufacturing process
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(3) Distribution of food
(4) None of the above

85. What is the purpose of FSMS (Food Safety Management System) ?

(1) To ensure the storage, distribution and sale of safe food.

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(1) 1.10 (2) 1.25

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(1) particle to be ground with the roll

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(1) $W/m^2.K$ (2) $kW/m^2.K$

(3) $Btu/ft^3.h.°C$ (4) $kcal/m^2.h.°C$

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(1) Nature of body

(2) Physical nature

(3) Temperature of body

(4) All of the above

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(1) Registration

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(1) $\alpha = 1, \varepsilon = 0, \tau = 0$

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(4) None of these

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Total No. of Printed Pages : 21

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C

SET-Y

Ph.D./URS-EE-Jan-2022

SUBJECT : Food Technology

10007

Sr. No. .....

Time : 1¼ Hours | Max. Marks : 100 | Total Questions : 100

Roll No. (in figures)_____ (in words) _____

Name _____ Father's Name _____

Mother's Name _____ Date of Examination _____

_____ _____

(Signature of the Candidate) (Signature of the Invigilator)

CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

1. ***All questions are compulsory.***
2. The candidates ***must return*** the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along with answer key of all the A, B, C & D code will be got uploaded on the University website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet/Answer Key, the same may be brought to the notice of the Controller of Examination in writing/through E.Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered.
5. The candidate ***must not*** do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers ***must not*** be ticked in the question booklet.
6. ***There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.***
7. Use only **Black** or **Blue Ball Point Pen** of good quality in the OMR Answer-Sheet.
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C

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(3) Centrifugal separation (4) Fluidization

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(3) Free flowing (4) None of these

54. The differential speed of rolls used in wheat mill is :

(1) 1.5 : 1 (2) 2.5 : 1

(3) 4.5 : 1 (4) 3.5 : 1

55. Which of the following law is used to predict energy requirement for grinding a material ?

(1) Raoult's law
(2) Newton's law
(3) Kick's law
(4) Stoke's law

56. Moisture content of wheat on dry basis is 25%, what will be on wet basis ?

(1) 20%
(2) 28%
(3) 24%
(4) 26%

57. Watson law, which gives a relationship between the concentration of bactericide 'C' and the time necessary to accomplish a standard destruction, is given by :

(1) Ct = constant
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58. Transmittance properties of food material are used to indicate :

(1) Extent of processing in biscuits
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59. During the discharge of the solids of bins and hoppers, the angle comes into play is :

(1) angle of friction
(2) dynamic angle of friction
(3) angle of repose
(4) angle of rotation

60. Dielectric constant of a food material depends upon :

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

61. Infrared wavelength is represented by which of the following ?

(1) 10^{-4} cm
(2) 10^{-5} cm
(3) 10^{-6} cm
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62. Which of the following methods can't be used to calculate thermal process time ?

(1) General method
(2) Runga- Kutta method
(3) Formula method
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63. If the value of Z is around 115°C, then Q_{10} will be :

(1) 1.22
(2) 2.11
(3) 1.586
(4) 5.18

64. Thermal death time model equations for microbial inactivation at different temperatures can be expressed as :

(1) $\log \frac{F}{F_0} = \frac{T - T_0}{Z}$
(2) $\log \frac{D}{D_0} = \frac{T - T_0}{Z}$
(3) $\log \frac{t_0}{t_T} = -\frac{T - T_0}{Z}$
(4) All of these

65. Kg of steam/kg of water vapour removed in an evaporator is called :

(1) Efficiency
(2) Effectiveness
(3) Steam use ratio
(4) Specific steam consumption

66. Radiation heat transfer is characterized by :

(1) Energy transport as a result of bulk fluid motion
(2) Thermal energy transfer as vibrational energy in the lattice structure of the material
(3) Movement of discrete packets of energy as electromagnetic waves
(4) Circulation of fluid motion depends on buoyancy effects

67. The time temperature combination for HTST pasteurization of 71.1°C for 15 sec is selected on the basis of :

(1) *Coxiella burnetii*
(2) *E. coli*
(3) *B. subtilis*
(4) *C. botulinum*

68. Stationary phase is described as :

(1) no further increase in the cell population after a maximum value
(2) deceleration of growth and division rate after the growth rate reaches a maximum
(3) acceleration of growth and division rate after the growth rate reaches a maximum
(4) deceleration of growth and division rate after the growth rate reaches a minimum

69. The function of the disengagement zone in an airlift fermenter is to :

(1) prevent CO_2 rich bubbles from entering the downcomer
(2) reduce the velocity of the bubbles
(3) reduce liquid loss as aerosols
(4) all of the above

70. The monod model predicts that the specific growth rate :

(1) will decrease with the conc. of the growth limiting substrate

(2) will increase with the conc. of the growth limiting substrate until it reaches a maximum value

(3) will increase with the conc. of the growth limiting substrate

(4) does not depend on growth limiting substrate

71. Among the following which group of fat is unsaturated ?

(1) Oleic, Linoleic

(2) Butyric, Lauric

(3) Caproic, Butyric

(4) Styrene, Lauric

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(1) Water starts boiling

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73. Which is major phenol substrate for phenolase action in enzymatic browning reaction ?

(1) Caffeic acid

(2) Chlorogenic acid

(3) Phenol oxidase

(4) Tyrosine

74. Phenomenon of osmosis causes ..... of true liquid separated by chemical membrane.

(1) Change in relative density

(2) Change in specific gravity

(3) Change in relative volume

(4) Change in relative viscosity

75. A liquid freeze when its vapor pressure is equal to :

(1) Vapor pressure of solid

(2) Vapor pressure of atmosphere

(3) Vapor pressure of liquid

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(1) Pseudoplastic, Thixotropic

(2) Dilatent, Rheopectic

(3) Dilatent, Pseudoplastic

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Total No. of Printed Pages : 21

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SET-Y

D

Ph.D./URS-EE-Jan-2022

SUBJECT : Food Technology

10008

Sr. No. .....

Time : **1¼ Hours** Max. Marks : **100** Total Questions : **100**

Roll No. (in figures)_____ (in words) _____

Name _____ Father's Name_____

Mother's Name_____ Date of Examination_____

(Signature of the Candidate) (Signature of the Invigilator)

CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE STARTING THE QUESTION PAPER.

1. ***All questions are compulsory.***
2. The candidates ***must return*** the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along with answer key of all the A, B, C & D code will be got uploaded on the University website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet/Answer Key, the same may be brought to the notice of the Controller of Examination in writing/through E.Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered.
5. The candidate ***must not*** do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers ***must not*** be ticked in the question booklet.
6. ***There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.***
7. Use only **Black** or **Blue Ball Point Pen** of good quality in the OMR Answer-Sheet.
8. *Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained* **30** *minutes after starting of the examination.*

D

1. A keto acid involved in carbohydrate metabolism is :

(1) Citric acid
(2) Pyruvic acid
(3) Succinic acid
(4) Tricarboxylic acid

2. Carbohydrate free human diet leads to :

(1) Addition's disease
(2) Hyper adrenalism
(3) Hypothyroidism
(4) Ketosis

3. The most common simple proteins which act as reserve proteins in plants are :

(1) Albumins
(2) Globulins
(3) Glutelins
(4) Prolamins

4. The parts of the body protein that can be replaced by 100 parts of the protein fed in t test is known as :

(1) Biological value
(2) Chemical score
(3) Digestibility coefficient
(4) Protein Efficiency Ratio

5. Riboflavin is rapidly destroyed in :

(1) Acid medium
(2) Alkaline medium
(3) Neutral medium
(4) All the above

6. Consumption of raw eggs by adults may lead to :

(1) Biotin deficiency

(2) Calcium deficiency

(3) Folic acid deficiency

(4) Phosphorus deficiency

7. Monosaccharides constituting lactose are :

(1) Galactose-galactose

(2) Galactose-glucose

(3) Glucose-glucose

(4) Glucose-fructose

8. Differential speed ratio of the pairs of break rolls of Buhler mill is :

(1) 3 : 1

(2) 2.5 : 1

(3) 1.5 : 1

(4) 1 : 1

9. One refrigeration ton is equivalent to :

(1) 1000 kg/day

(2) 1000 Btu/day

(3) 12000 kg/hour

(4) 12000 Btu/hour

10. Cleaning of cereals by aspiration is based on :

(1) Aerodynamic properties

(2) Hydrodynamic properties

(3) Magnetic properties

(4) Thermal properties

11. Which one of the following cannot be the unit of convective heat transfer coefficient ?

(1) $W/m^2.K$ (2) $kW/m^2.K$

(3) $Btu/ft^3.h.°C$ (4) $kcal/m^2.h.°C$

12. The emissive power of a body depends on :

(1) Nature of body (2) Physical nature

(3) Temperature of body (4) All of the above

13. Licensing and registering authority have the power to ..... .

(1) Registration (2) Licensing

(3) Cancellation of License (4) All of the above

14. The Global Food Safety Initiative was created by the :

(1) Food and Drug Administration

(2) British Retail Consortium (BRC)

(3) Global Food Business Forum

(4) World Health Organization (WHO)

15. In a concentric double pipe heat exchanger one fluid undergoes phase change :

(1) Two fluids should opposite to each other

(2) Two fluids should flow parallel to each other

(3) Two fluids should flow normal to each other

(4) The direction of flow of the two fluids are of no consequences

16. For a perfectly black body :

(1) $\alpha = 1, \varepsilon = 0, \tau = 0$

(2) $\alpha = \varepsilon = 0, P = 1$

(3) $\alpha = \tau = 0, \varepsilon = 1$

(4) None of these

17. For laminar flow (in flow inside pipes) Sherwood number shows the same trends as :

(1) Nusselt number

(2) Reynolds number

(3) Stanton number

(4) Prandtl number

18. Effect of temperature on the reaction rate is given by :

(1) Arrhenius equation

(2) Gibbs Helmholtz equation

(3) Kirchoff's law

(4) None of the above

19. Which of the following is ***true*** about ISO 2002 method for Salmonella detection ?

(1) Selenite cystine (SC) broth is replaced by Muller Kauffmann tetrathionate novobiocin broth (MKTTn)

(2) Rappaport Vassiliadis (RV) broth has been replaced by Rappaport Vassiliadis Soya (RVS broth

(3) XLD is the first isolation medium rather than BGA

(4) All of these

20. What are the intrinsic factors for the microbial growth ?

(1) pH

(2) Moisture

(3) Oxidation-Reduction Potential

(4) All of these

21. Plank's equation describing freezing of food was derived from a few assumptions and the following was ***not*** one of these assumptions :

(1) Pseudo-steady state condition

(2) A definite freezing point

(3) Freezing starts at the freezing point

(4) None of the above

22. Temperature commonly used for air freezing is :

(1) –23°C to –30°C

(2) –180C to –40°C

(3) –40°C to –42°C

(4) 23°C to 30°C

23. Coefficient of performance of a refrigerator is given by :

(1) Heat removed by the evaporator divided by the heat rejected by the condenser

(2) Heat removed by the evaporator divided by the compressor work

(3) Heat rejected by the condenser divided by compressor work

(4) None of the above

24. Pick out the correct relationship between Ri (internal reflux ratio) and Ro (external reflux ratio) :

(1) (1+Ro)=Ro/Ri
(2) (1–Ro)=Ro/Ri
(3) (1+Ro)=Ro/Ri
(4) (1–Ri)=Ro/Ri

25. In case of gases, the binary diffusivity is proportional to (where p=pressure) :

(1) p
(2) 1/p
(3) $1/\sqrt{p}$
(4) $\sqrt{p}$

26. In extraction, as the temperature increases, the area of heterogeneity (area covered by binodal curve) :

(1) Decreases
(2) Increases
(3) Remain unchanged
(4) None of these

27. Azeotropic distillation is employed to separate :

(1) Constant boiling mixture
(2) High boiling mixture
(3) Mixture with very high relative volatility
(4) Heat sensitive materials

28. The non-dimensional number of mass transfer which is function of Prandtl number and Schmidt number is :

(1) Sherwood number
(2) Lewis number
(3) Nusselt number
(4) Grates number

29. In which model, monolayer value comes into function :

(1) BET model (2) Kelvin model

(3) GAB model (4) Henderson model

30. Constant rate of drying is directly proportional to :

(1) Convective heat transfer coefficient

(2) Latent heat of vaporization

(3) Wet bulb temperature

(4) None of the above

31. ISO 9001:2008 is an update of an earlier ISO :

(1) ISO 9000:2005 (2) ISO 9001:2000

(3) ISO 9000:2000 (4) ISO 9004:2000

32. The eight quality management principles are defined in :

(1) ISO 9000:2000 (2) ISO 9004:2000

(3) ISO 9000:2005 (4) Both (1) & (2)

33. The primary function of a QA department is to provide confidence for ?

(1) Supplier

(2) Retailer

(3) Management and Consumer

(4) Wholesaler

34. Good manufacturing practice means understanding, analyzing and controlling the :

(1) The manufacturing process (2) Laboratory

(3) Distribution of food (4) None of the above

35. What is the purpose of FSMS (Food Safety Management System) ?

(1) To ensure the storage, distribution and sale of safe food.

(2) To ensure the manufacture, distribution and sale of safe food.

(3) To ensure the manufacture, storage and sale of safe food.

(4) To ensure the manufacture, storage, distribution and sale of safe food.

36. Molecular sieves are regenerated by heating to :

(1) <150°C (2) >500°C

(3) 200-330°C (4) >1000°C

37. According to Poiseuille's law, the permeability for gas flow through a capillary is proportional to (μ =gas viscosity) :

(1) μ (2) $1/\mu$

(3) $\sqrt{\mu}$ (4) μ^2

38. 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) 1.10 (2) 1.25

(3) 1.75 (4) 1.85

39. The ratio between apertures in consecutive screen in Tyler series is :

(1) 2 (2) $2^{1/2}$

(3) $2^{1/4}$ (4) Both (2) and (3)

40. Angle of nip is formed by the :

(1) particle to be ground with the roll

(2) tangents to the roll faces at the point of contact between a particle and rolls

(3) heap of material in free fall to the rolls

(4) None of these

41. The characteristic odour of garlic is due to :

(1) Naringin (2) Allicin

(3) Hesperidin (4) Thioglucosides

42. The flavour components of the cabbage and cauliflower are due to :

(1) Naringin (2) Allicin

(3) Hesperidin (4) Thioglucosides

43. The formation of brown colour in fruits and vegetables when cut is due to the action of following enzyme on phenolic substances.

(1) Tyrosinase (2) Amylase

(3) Phenolase (4) Peroxidase

44. The enzyme which hydrolyzes sucrose into glucose and fructose is :

(1) α-amylase
(2) β-amylase
(3) Cellulase
(4) Invertase

45. The haziness noticed in fruit juices and wines can be removed using :

(1) Cellulase
(2) Pectinase
(3) Invertase
(4) α-amylase

46. The enzyme which decomposes hydrogen peroxide to water is :

(1) Cellulase
(2) Lipase
(3) Catalase
(4) α-amylase

47. The enzyme which bleaches the flour to produce a very white crumb is :

(1) Invertase
(2) Lipoxygenases
(3) Catalase
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48. A mole of non-ionizing solute in a litre of water depresses its freezing point by :

(1) 5.58°C
(2) 3.72°C
(3) 2.24°C
(4) 1.80°C

49. The gas used for flushing the processed and packaged food is :

(1) Hydrogen
(2) Nitrogen
(3) Carbon dioxide
(4) Oxygen

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(1) Electromagnetic waves

(2) Elastic impact of molecules

(3) Motion of electrons

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(2) Cyclone separation
(3) Centrifugal separation
(4) Fluidization

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(2) Easy flowing
(3) Free flowing
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84. The differential speed of rolls used in wheat mill is :

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(2) 2.5 : 1
(3) 4.5 : 1
(4) 3.5 : 1

85. Which of the following law is used to predict energy requirement for grinding a material ?

(1) Raoult's law
(2) Newton's law
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(3) 1.586

(4) 5.18

94. Thermal death time model equations for microbial inactivation at different temperatures can be expressed as :

(1) $\log \frac{F}{F_0} = \frac{T - T_0}{Z}$

(2) $\log \frac{D}{D_0} = \frac{T - T_0}{Z}$

(3) $\log \frac{t_0}{t_T} = -\frac{T - T_0}{Z}$

(4) All of these

95. Kg of steam/kg of water vapour removed in an evaporator is called :

(1) Efficiency

(2) Effectiveness

(3) Steam use ratio

(4) Specific steam consumption

96. Radiation heat transfer is characterized by :

(1) Energy transport as a result of bulk fluid motion

(2) Thermal energy transfer as vibrational energy in the lattice structure of the material

(3) Movement of discrete packets of energy as electromagnetic wanes

(4) Circulation of fluid motion depends on buoyancy effects

97. The time temperature combination for HTST pasteurization of 71.1°C for 15 sec is selected on the basis of :

(1) *Coxiella burnetii*

(2) *E. coli*

(3) *B. subtilis*

(4) *C. botulinum*

98. Stationary phase is described as :

(1) no further increase in the cell population after a maximum value

(2) deceleration of growth and division rate after the growth rate reaches a maximum

(3) acceleration of growth and division rate after the growth rate reaches a maximum

(4) deceleration of growth and division rate after the growth rate reaches a minimum

99. The function of the disengagement zone in an airlift fermenter is to :

(1) prevent CO_2 rich bubbles from entering the downcomer

(2) reduce the velocity of the bubbles

(3) reduce liquid loss as aerosols

(4) all of the above

100. The monod model predicts that the specific growth rate :

(1) will decrease with the conc. of the growth limiting substrate

(2) will increase with the conc. of the growth limiting substrate until it reaches a maximum value

(3) will increase with the conc. of the growth limiting substrate

(4) does not depend on growth limiting substrate

Answerkey of Entrance test PHD/URS Food Technology 2021-22				
Q. No.	A	B	C	D
1	3	1	2	2
2	2	2	4	4
3	3	1	3	4
4	1	4	1	1
5	2	4	4	2
6	2	3	2	3
7	1	1	2	2
8	4	1	2	2
9	2	4	4	4
10	3	2	2	1
11	2	2	2	3
12	4	3	4	4
13	3	1	3	4
14	1	2	4	3
15	4	3	2	4
16	2	1	3	1
17	2	4	2	1
18	2	2	4	1
19	4	2	2	4
20	2	2	2	4
21	2	3	2	1
22	3	2	4	2
23	1	3	4	2
24	2	1	1	1
25	3	2	2	2
26	1	2	3	1
27	4	1	2	1
28	2	4	2	1
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32	2	4	4	4
33	2	3	4	3
34	1	4	3	1
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37	1	2	1	2
38	1	4	1	2
39	1	2	4	4
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44	4	3	1	4
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46	3	1	1	3
47	1	1	1	2
48	1	4	1	4
49	4	1	1	2
50	2	3	1	2

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51	3	1	2	4
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96	3	1	1	3
97	2	1	3	1
98	4	1	4	1
99	2	4	1	4
100	2	4	2	2