Select the most appropriate answer in the answer sheet given at the end of this question paper

FOOD PROCESSING

1) The cold point in convection heating foods lies at …..

(a) The geometrical center of the can (b) 1/10th the height of the can from the bottom

(c) 1/10th the height of the can from the top (d) 1/5th the height of the can from the bottom

2) Flash 18 process is carried out for foods having pH ….

(a) Less the 4.5 (b) greater than 4.5 (c) greater than 3.7 (d) less than 3.7

3) Flat sour spoilage is caused by …….

(a) *B. coagulans* (b) *Cl. botulinum* (c) *Cl. butyricum* (d) *S. cerevisiae*

4) Approximate lower limit of water activity for the growth of xerophilic fungi is ……..

(a) 0.65 (b) 0.80 (c) 0.90 (d) 1.0

5) Irradiation dose levels for radurization lies in the range of ….

(a) 0.75 – 2.5 kGy (b) 0.75 – 2.5 Gy (c) 0.75 – 2.5 krad (d) 0.75 – 2.5 rad

6) 10 kGy of ionizing energy is equivalent to heat energy of ……..

(a) 10 kJ/kg (b) 10 J/kg (c) 10 kJ/g (d) 10 cal/kg

7) The z-value of *Cl. botulinum* is ……

(a) 10 ˚C (b) 10 ˚F (c) 20 ˚C (d) 20 ˚F

8) The moisture content of freeze-dried foods is …….

(a) 12% (b) 8% (c) 2% (d) 0%

9) Most dehydrated foods are stable for a long time at moisture content in the range of ….. %

(a) less than 1 (b) greater than 1 (c) 1 – 2 (d) greater than 2

10) For most foods, the supercooling temperature is ……..

(a) 0˚C (b) 0˚F (c) –10˚C (d) –10 ˚F

11) …….. is an example of climacteric fruits.

(a) Lemon (b) Orange (c) Mango (d) Pineapple

12) The CO_2 concentration in CA storage of apple is in the range of ……

(a) 2 – 10% (b) 1 – 8% (c) 1 – 2% (d) 2 – 5%

13) The optimum pH for gel formation is ……..

(a) 6.2 (b) 5.2 (c) 4.2 (d) 3.2

14) A good jam should contain invert sugar in the range of ……. % of total sugar

(a) 5 – 50 (b) 10 – 50 (c) 20 – 50 (d) 30 – 50

15) The final concentration of brine in salt-stock preparation is ……

(a) 60°S (b) 50°S (c) 40°S (d) 30°S

16) Approximate lethal dose of ionizing radiation for man is ……..

(a) 6 – 10 kGy (b) 6 – 10 krad (c) 0.6 – 1 kGy (d) 0.6 – 1 krad

17) The ADI of SO2 for man is ……. mg/kg body wt

(a) 72 (b) 0.72 (c) 7.2 (d) 720

18) SO_2 is much more toxic to …….

(a) Yeasts (b) molds (c) bacteria (d) both b and c

19) Jam can be preserved by using ….. MPa pressure

(a) 4 (b) 40 (c) 400 (d) 4000

20) Most plant cells are killed at electric field greater than …….

(a) 15 V/cm (b) 15 kV/cm (c) 150 V/cm (d) 150 kV/cm

FOOD ENGINEERING

1. Which one of the following is most efficient distillation process?

   (a) Simple distillation (b) Steam Distillation (c) Rectification (d) all

2. Ethanol and water are the ……. mixture

   (a) Maximum boiling azeotropic (b) minimum boiling azeotropic

   (c) zeotropic (d) none

3. Which of the following has high latent heat of evaporation?

   (a) Ether (b) Water (c) Alcohol (d) Chloroform

4. If oil with density 965 kg/m^3 and viscosity 2×10^{-4} N/ms^2 is flowing with 2 m/s average velocity in a pipe of diameter 2 cm then, the flow is……

(a) Turbulent flow (b) Laminar flow (c) Intermediate flow (d) All of the above

5. Mother liquor is.

(a) Unsaturated solution (b) Supersaturated solution

(c) Saturated solution (d) Both a and c

6. Separation of colloidal particles is carried out by……

(a) Filtration (b) Evaporation (c) Crystallization (d) Centrifugation

7. The biscuit manufacturing plant follows the layout principle of …….

(a) Product layout (b) Process Layout (c) Mixed layout (d) any one

8. The drying equation for constant rate drying is……..

(a) $t = \frac{L_s}{AR_c\left(X_1 - X_2\right)}$ (b) $t = \frac{L_s}{AR_c\left(X_2 - X_1\right)}$ (c) $t = \frac{AR_c}{L_s}\left(X_2 - X_1\right)$ (d) none

9. Which one of the following mixture is homogenous?

(a) Sand and water (b) milk (c) muddy water (d) None

10. Which of the following device cannot be used to measure negative pressure?

(a) piezometer- tube (b) U-tube manometer (c) burden tube gauze (d) None

11) At constant rate drying period, the latent heat of evaporation of water is

a) Less than pure water b) Higher than pure water

c) Equal to pure water d) Equal to ice at -10 ^{0}C

12) The unit of thermal diffusitivity is……

a) m^2/s b) W / m^2K c) J / mK d) none

13) Which one is false…….

a) Gauze pressure = Absolute pressure – Atmospheric pressure

b) Vacuum pressure = Atmospheric pressure - Absolute pressure

c) Atmospheric pressure = 760 mm of Hg

d) Gauze pressure = Absolute pressure + Atmospheric pressure

14) 1000 lb mol / Ft^2h is equivalent to …….. Kg mol/ m^2s

a) 1.2 b) 2.67 c) 1.56 d) None

15) Evaporation of less viscous fluid is carried out in ……

a) Falling film b) Rising Film c) Forced circulation d) Agitated

16) Super-saturation of any solution can be created by……..

a) Decreasing the temperature b) Addition of other solute

c) Removing solvent d) All

17) Heat sensitive liquid food products are generally dried in…

a) Drum dryer b) cabinet dryer c) spray dryer d) fluidized bed dryer

18) The triple point of water is ……

a) 4.58 torr and 0^0C b) 4.68 torr and 10^0C

c) 5.48 torr and 0^0C d) 4.58 torr at 10^0C

19) If protein content of food is 12 % on wet basis of 60 % moisture food than what would be the value on dry basis?

a) 25 b) 30 c) 35 d) 44

20) At breakeven point…… which one is true?

a) Total fixed cost is equal to total variable cost

b) Total fixed cost is higher than total variable cost

c) Total profit is equal to total loss

d) No profit no loss

FOOD CHEMISTRY

1) Free aldehyde or ketone functional group is the characteristic of

a) Reducing sugar b) Non-reducing sugar c) protein d) None of them

2) What type of the sugars rotates the plane of polarized light in anticlockwise direction

a) Dextrorotatory b) levorotatory c) Both d) None

3) The compound with same structural formula but differing configuration around one carbon atom are called

a) Optical isomers b) Epimers c) Stereoisomer d) Anomers

4) Which carbohydrate is the heteropolysaccharides?

a) Starch b) Pectin c) Both of them d) None of them

5) The glycosidic bond in linear chain of glucose molecules in starch has
   a) Alpha 1,4 b) Beta 1,4 c) Both of them d)None of them

6) In Which amino acid has alpha- carbon is symmetric in nature
   a) Glycine b) Valine c) Leucine d) All of them

7) Which enzyme cleave starch molecule randomly at alpha 1,4 linkage but bypass the alpha 1,6 linkage
   a) Beta amylase b) Alpha amylases c) Glucoamylases d) All of them

8) All the protein or amino acid exist as dipolar at
   a) Isoelectric pH b) Zwitterionic state c) Both of them d) None of them

9) Find the incorrect statement about the protein and amino acids
   a) Amino acids & proteins are ampholytes b) Protein cannot form hydrates with water
   c)Protein have high molecular weight d) Protein form gel on acid coagulation

10) Which of the following amino acid is essential amino acid
   a) L-leucine b)L-lysine c) Both of them d)None of them

11) The reaction between the amino groups of protein and aldehyde group of reducing sugar is known as
   a) Caramelization b) Maillard reaction c) Rancidity d)Hydrolysis

12) Which enzyme preferentially hydrolyzes the peptide linkage basic amino acid is involved by its carboxyl group.
   a) Pepsin b) Trypsin c) Chymotrypsin d) All of them

13) Those fatty acids in which all carbon atoms in the main chain contain two hydrogen atoms and thus contain no double bonds are termed as
   a) Saturated fatty acid b) Unsaturated fatty acid
   c) Cyclic fatty acid d) Substituted fatty acid

14) Which groups of following fatty acids are polyunsaturated fatty acids
   a) Linoleic and linoleic acid b) Oleic and linoleic acid
   b) Linolenic and arachidic acid d) All of them

15) Which statements is true for melting point of fats
   a) Melting point of fat increases with an increase in the degree of saturation
   b) Melting point of fat increases with increases in chain length of fatty acid
   c) Trans-isomers of fatty acids have higher melting point.
   d) All are true

16) Which value measures the extent of unsaturation of fatty acid present in fat?
a) Saponification value b) Iodine value c) Acid value d) Polenske value

17) Which bond in fatty acid plays a central role in autoxidation
a) Saturated bond b) Unsaturated bond c) Both of them d) None of them

18) The monolayer water has water activity in the range of
a) 0.0 - 0.2 b) 0.2 – 0.4 c) 0.4 - 0.6 d) 0.6 - 0.8

19) Which groups of the following are artificial sweeteners?
a) Cellibiose and saccharine b) Mellibiose and saccharine
c. Saccharine and aspartame d) All of them

20) The correct method for determination of moisture content in ginger is
a) Hot air oven method b) Immiscible solvent distillation method
c) Both of them d) None of them

BASIC AND FOOD MICROBIOLOGY

1. Pathogenic bacteria are generally

(a) Thermophilic (b) Mesophilic (c) Psychrophilic (d) Halophilic

2. The common name of *Candida utilis* is

(a) Torula yeast (b) Torulopsis (c) Fission yeast (d) Food yeast

3. Glutamic acid is not produced by

(a) *Corynebacterium* (b) *Mycobacterium* (c) *Brevibacterium* (d) *Arthrobacter*

4. The dominant bacterial genus found in soil is

(a) *Micrococcus* (b) *Leuconostoc* (c) *Streptomyces* (d) *Lactobacillus*

5. Botulinum cook has relevance to heat processing of foods like

(a) Tomatoes (b) Meat /fish/mushroom (c) Both (a) and (b) (d) None

6. Staphylococcal poisoning involves production of

(a) Enterotoxin (b) Neurotoxin (c) Endotoxin (d) Exotoxin

7. Pasteurization time-temperature has been designed to reduce the number of milk flora by at least

(a) 3 D (b) 4 D (c) 5 D (d) 9 D

8. The homolactic bacterium among the options is

(a) *Leuconostoc mesenteroides* (b) *Leuconostoc lactis* (c) *Lactobacillus brevis* (d) *Streptococcus thermophilus*

9. Acidoceno-anabiosys principle implies preservation by

(a) Acetic acid (b) Lactic acid (c) Citric acid (d) Benzoic acid

10. Baker's yeast production involves

(a) Pasteur effect (b) Glucose effect (c) Crabtree effect (d) Diauxic effect

11. Aflatoxin is produced by

(a) *Fusarium* (b) *Penicillium notatum* (c) *Aspergillus oryzae* (d) *Aspergillus parasiticus*

12. *Escherichia coli* is

(a) Gram +ve, non-spore former (b) Gram +ve, spore former (c) Gram –ve, non-spore former (d) Gram –ve, spore former

13. Dimerization of DNA bases upon exposure to UV light involves covalent bonding of adjacent

(a) Guanine (b) Thymine (c) Cytosine (d) Adenine

14. A Z-value typical of spore-forming bacteria is

(a) 10°C (b) 20°C (c) 25°C (d) 30°C

15. Ropiness in bread is caused by

(a) *Bacillus licheniformis* (b) *Bacillus subtilis* (c) *Bacillus cereus* (d) all

16. In microscopy, one of these is an example of simple staining

(a) Gram staining (b) Endospore staining (c) Acid-fast staining (d) Negative staining

17. *Coxiella burnettii* causes

(a) Q-fever (b) Hay fever (c) Typhoid fever (d) Malta fever

18. In yogurt fermentation, the ratio of *Lactobacillus bulgaricus* to *Streptococcus thermophilus* should be

(a) 1:1 (b) 1:2 (c) 2:1 (d) 1:1.5

19. The minimum water activity for most spoilage bacteria is

(a) 0.75-0.8 (b) 0.85-0.87 (c) 0.95-0.99 (d) 0.90-0.91

20. A process of fractional sterilization with flowing steam is known as

(a) Commercial sterilization (b) Tyndallization (c) Appertization (d) Fractalization

FOOD ANALYSIS

1. Sorbates and Benzoates preservatives are most active at following pH of food system

   a. neutral b. Basic c. Acidic d. not depends on PH

2. SPS under WTO stands for

   a. Standards, Prevention and Specification b. Sanitary and Phytosanitary measures
   c. Specifications for products and supplements d. Safety and prevention of Sickness

3. Lead chromate is a common adulterant found in

   a. Water b. Soft drinks c. Turmeric powder d. Vegetable oils

4. Which of the following is NOT covered under 'Finished Product Quality Assurance'?

   a. Finished product monitoring b. Special finished product survey
   c. Factory visits d. None of the mentioned

5. Benefits of Implementing HACCP/ ISO 22000:

   a. A preventive approach to food safety
   b. Reduce the need for and cost of end product testing
   c. Can help to identify process improvements and reduce customer complaints
   d. All of above

6. The Nepalese mandatory standards for use of artificial color in food is

   a) Not more than 50 ppm b) Not more than 100 ppm
   c) Not more than 150 ppm d) Not more than 200 ppm.

7. The mandatory standard of Nepal for coliform count in pasteurized market milk is

   a. Nil per 1 ml b) Nil per 10 ml c)Nil per 100 ml d) Nil per 1000 ml

8. A Duo-trio test is used in

   a. Chemical analysis of food b) Physical analysis of food
   c) Sensory analysis of food d) Physico chemical analysis of food

9. Residue of DDT in food is not more than

   a. 0.0 ppm b) 0.1 ppm c) 1.0 ppm d) 10.0ppm

10. Which of the following is biological hazards

    a. Salmonella b. Dirt c. Cleaners d. Antibiotics

STORAGE TECHNOLOGY

1) Grain infestating insect cannot survive above
   a) 32^0C b) 37^0C c)42^0C d)47^0C

2) Moisture movement is faster in kernel through
   a) Pericarp to endosperm b) Germ to endosperm
   b) Hair to endosperm d) Testa to endosperm

3) The most potent aflatoxin is
   a) B_1 b) B_2 c) G_1 d) G_2

4) Minimum water activity required to cause spoilage by aspergillus flavus
   a) 0.5 b) 0.6 c) 0.7 d) 0.8

5) The insect commonly develop inside the grain kernel is
   a) *Sitophilus granurius* b) *Tribolium castaneum*
   b) *Tribolium confusum* d) *Plodia interpunctella*

6) Which of the following is not fumigant
   a) Dichlorvos b) Pyrethrius c) Hydrogen cyanide d) Methyl bromide

7) Sphericity of wheat grain is
   a) 0.36 b) 0.48 c) 0.58 d) 0.71

8) 1000 kernels weight of maize is
   a) 100 g b) 150 g c) 200 g d) 250 g

9) Bulk density of wheat is …….. kg/Hl
   a) 57 b) 77 c) 67 d) 87

10) Compound 1080 (sodium monofluroacetate) is a
   a) Acute rat poison b) Anti-coagulant poison of rat
   b) Insect poison d) Mites poison