REV-00
BFST/18/25

2017/12

B.SC FOOD SCIENCE & TECHNOLOGY
SEMESTER-1ST
FOOD PROCESSING & PRESERVATION
BFST-104

Duration: 3 Hrs. **Marks: 70**

Part : A (Objective) = 20
Part : B (Descriptive) = 50

[PART-B : Descriptive]

Duration: 2 Hrs. 40 Mins. **Marks: 50**

[Answer question no. One (1) & any four (4) from the rest]

1. Define the terms – (a) Sphericity, (b) Grading, (c) Sorting, (d) Sulphiting, (e) Angle of repose. 2X5=10

2. Define Hysteresis with diagram. Write down the relation between db(mc) & wb(mc). 500 kg of paddy at 22% mc(wb) is dried to 14% mc(wb). Calculate the amount of moisture removed in drying. 4+1+5=10

3. Define EMC. Write four importance of EMC. Determine the values of constants c and n from Henderson's equations for EMC studies of sunflower seed. 1+2+7=10

Conditions	rh (%)	Temperature (°C)	EMC % (db)
1	50	40	10
2	70	50	13

4. Define thermal conductivity & thermal diffusivity. The thermal conductivity, K of potato varies with the following relationship 4+2+4=10

$$K=0.148 + 0.493W$$

Where W is the fraction of moisture present in the material. Calculate thermal conductivity of potatoes at 65% mc(wb).
Determine the thermal diffusivity of soyabean grain, if thermal conductivity is 0.3 kcal/mh°C, sp heat is 0.4 kcal/kg°C & bulk density is 640 kg/m^3.

5. Define refrigeration & freezing. Explain vapour compression cycle with diagram. 4+6=10

6. What are food additives? Describe any of the five food additives with examples. 2+8=10

7. Define alcoholic fermentation. Write down the factors affecting fermentation. Write in brief about 4 fermented products. 2+4+4=10

8. Define evaporation. Show with labeled diagram the difference between single effect & multiple effect evaporator. Write down four advantages of evaporator. 2+6+2=10

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[PART-A : Objective]

Choose the correct answer from the following : **1X20=20**

1. Micro organisms that produce more than one product by fermentation is known as
   a. Homogeneous
   b. Homo fermentative
   c. Hetero fermentative
   d. Heterogeneous

2. During maturing of vinegar, reactions between residual ethanol & acetic acid forms _____, which imports the characteristic flavor to the product.
   a. Ethyl citrate
   b. Ethyl methanoate
   c. Methyl acetate
   d. Ethyl acetate

3. In blanching heat transfer takes place by
   a. Conduction
   b. Convection
   c. Both (a) and (b)
   d. Radiation

4. One of the purposes of blanching is to _____ the texture of vegetables
   a. Harden
   b. Soften
   c. Both
   d. None

5. A relatively mild heat treatment, in which food is heated below 100°C
   a. Sterilization
   b. Pasteurization
   c. Radicidation
   d. None

6. The main purpose of dehydration is to extend the shelf life of food by a reduction in
   a. Protein content
   b. Carbohydrate content
   c. Water content
   d. None

7. During freezing _____ heat is first removed to lower temperature of a food to the freezing point.
   a. Sensible
   b. Latent
   c. Both
   d. None

8. Heat produced by respiration by fruits and vegetables is known as _____
   a. Field heat
   b. Heat load
   c. Both
   d. Latent heat

9. Which of the following operation is used to pre concentrate liquid foods?
   a. Evaporation
   b. Dehydration
   c. Pasteurization
   d. All

10. A liquid's internal resistance to flow is
    a. Viscosity
    b. Density
    c. Consistency
    d. None

11. Heart of the refrigerator
    a. Evaporator
    b. Compressor
    c. Condenser
    d. Expansion valve

12. _____ is a measure of sharpness of solid material.
    a. Roundness ratio
    b. Roundness
    c. Sphericity
    d. None

13. Classification of clean products into various quality fractions depends on commercial value
    a. Grading
    b. Sorting
    c. Cleaning
    d. Size reduction

14. In deep bed drying, layer of grains are
    a. Less than 15 cm
    b. Equal to 15 cm
    c. More than 15 cm
    d. None

15. Units of refrigeration are
    a. BTU
    b. Tonn of refrigeration
    c. Kelvin
    d. Both (a) and (b)

16. E_{300} to E_{399} represents
    a. Antioxidants & acidity
    b. Sweeteners
    c. Colors
    d. Both (a) and (c)

17. The most common radioactive source in food irradiation
    a. Cobalt – 06
    b. Cobalt – 70
    c. Cobalt – 60
    d. All of the above

18. Which of the following is true
    a. Desorption EMC values are less than adsorption EMC values
    b. Desorption EMC values are equal to adsorption EMC values
    c. Desorption EMC values are higher than adsorption EMC values
    d. None

19. Unit of food irradiation is
    a. Kilo grey
    b. Kilo gray
    c. Both
    d. None

20. Sulphiting is a family of food preservatives including
    a. sulphur dioxide
    b. sodium bisulphide
    c. potassium meta bi sulfide
    d. A!l of the above

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UNIVERSITY OF SCIENCE & TECHNOLOGY, MEGHALAYA

[PART (A) : OBJECTIVE]

Duration : 20 Minutes

Serial no. of the main Answer sheet

Course : .....

Semester : ..... **Roll No :** .....

Enrollment No : ..... **Course code :** .....

Course Title : .....

Session : 2017-18 **Date :** .....

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Instructions / Guidelines

- The paper contains twenty (20) / ten (10) questions.
- Students shall tick (✓) the correct answer.
- No marks shall be given for overwrite / erasing.
- Students have to submit the Objective Part (Part-A) to the invigilator just after completion of the allotted time from the starting of examination.

Full Marks	Marks Obtained
20	

Scrutinizer's Signature *Examiner's Signature* *Invigilator's Signature*