B. Sc FOOD SCIENCE & TECHNOLOGY

2NDSEMESTER

UNIT OPERATION IN FOOD PROCESSING BFST-201

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] 10 1. 'Membranes can separate particles and molecules over a wide particle size range & molecular weights' Explain. 2. State Darcy's law. Potatoes are dried from 14% to 93% total solids. 10 Considering 8% peeling losses, the product yield from 1 ton of raw potato will be? 3+4+3 3. Define radiation with expression. Classify boilers. Given 1000 kg cream testing 50% fat, how much skim milk testing 0.1% fat must be added to obtain 40% fat in the standardized cream. 4. Differentiate between conduction and convection. The rate of heat 6+4 transfer per unit area from a metal plate is 1000 W/m². The surface temperature of the plate is 120°C and ambient temperature is 20°C. Estimate the heat transfer coefficient. 5. Differential between dry bulb and wet bulb temperature. If the DBT and 3 + 7WBT of moist air are 35°C and 26°C find the other thermodynamic properties from psychometric chart. 10 6. Define the terms - (i) Dew point temperature, (ii) Young's modulus, (iii) Modulus of elasticity, (iv) Viscosity, and (v) Forced convection 5+5 7. Explain Reynolds experiment in determining different flow pattern with diagram. Two fluids - milk and rapeseed oil are flowing along pipes of same diameter of 5 cm at 20°C and at the same flow velocity of 3 m/s. Determine whether the flow is streamline or turbulent in each fluid.

 $(\rho_{\text{milk}} = 1030 \text{ kg/m}^3 \text{ and } \rho_{\text{oil}} = 900 \text{ kg/m}^3)$

8. Write down the units of - (i) Resistance, (ii) Thermal conductivity, (iii) 5+5 Charge, (iv) Thermal diffusivity and (v) Force. Write down the dimension of - (i) Frequency, (ii) Density, (iii) Centrifugal force, (iv) Torque and (v) Wavelength.

BFST/22/27

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[PART-A: Objective]

Choose the correct answer from the following:	1×20=20
1. Magnitude of a dimension is express	ed along with its
a. Unit	b. Sub unit
c. Suffix	d. Prefix
2. There are base units.	
a. Nine	b. Five
c. Seven	d. None
3. Power to a dimension is represented	as
a. Suffix	b. Prefix
c. Superscript	d. Subscript
4. Unit of electric current –	
a. Ohm	b. Ampere
c. Coulomb	d. Farad
5. Radian is a	unit
a. Complementary	b. Introductory
c. Supplementary	d. Additional
6. If force, time and velocity are treated	as fundamental quantities then the dimensional
formula of energy will be -	The state of the s
a. FTV	b. FT ² V
c .FTV ²	d. FT ² V ²
7. Resistivity is a –	
a. Dimensional quantity	b. Dimensionless quantity
c. Static quantity	d. Dynamic quantity
c. such quartery	a. Dynamic quantity
8. Boundary of an energy balance equa	tion must be such that
a. All relevant flows must not cro	oss it.
b. All non-relevant flows being o	
	must be possible in an easy and accurate manner.
d. None of the above	

9. A perfect black body has emissivity	equal to	
a. €> 1	b. €<1	
c. ∈ = 1	d. None of the above	
10. Which is true for radiation?		
a. Occur in the form of Electron		
b. Requires no physical mediun	n	
c. Occurs in perfect vacuum d. All of the above		
d. All of the above		
11. Which of the statement is true?		
a. Wet bulb temperature is grea		
b. Wet bulb temperature is equa		ш
c. Wet bulb temperature is less to d. None	than dry bulb temperature.	
u. None		
12. Reynolds number between 2100 -	4000 is called	
a. Transitional	b. Turbulent	
c. Laminar	d. Streamline	
13. Reynolds number is -		
a. Unity	b. Dimensional	
c. Dimensionless	d. None	
14. 1 giga meter is equal to	meters	
a. 10 ⁶	b. 10 ⁻⁶	
c. 10 ⁹	d. 10-9	
15 Unit of fraguancy is		
15. Unit of frequency is a. Ohm (Ω)	b. Hertz (Hz)	
c. Ohm meter (Ωm)	d. Radian	
Commission (Commission)		
16. For 10 ^(am2+6) the dimension of 'a' i	is	П
a. M ⁰ L ² T ⁰	b. M ⁰ L- ² T ⁰	
c. M ⁰ L- ² T ¹	d. ML ² T	
17. Pairs having same dimensional fo	ormula –	
a. Angular momentum and tore		
b. Torque and work		
c. Pressure and stress		
d. Both (b) and (c)		
18. The SI unit of temperature		
a.ºC	b. K	
c. °F	d.All of the above	

19. Which of the following is not unit of time	
a. Second c. Per sec	b. Year
c. Per sec	d. Light year
20. Pick up the correct statement -	
a. In SI system, surface tension is N/m	
b. In SI system, power is Watt	
c. In SI system, force is Newton	
d. All the above	
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***	= 1 (3) (3)

UNIVERSITY OF SCIENCE & TECHNOLOGY, MEGHALAYA



Question Paper CUM Answer Sheet

[PART (A): OBJECTIVE]

Serial no. of the main Answer sheet

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nrollm	ent No:		Course code :
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ession	20)16-17	Date:
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		Instructions /	Guidelines
		s twenty (20) / ten (10) qu	
		vrite the answer in the box	
	The student shall such act.	not overwrite / erase an	y answer and no mark shall be given for
9.19	Hand over the qu	uestion paper cum answe	r sheet (Objective) within the allotted time
	Full Marks	Marks Obtained	Remarks

Scrutinizer's Signature

Examiner's Signature

Invigilator's Signature