

Reg.No. _____

**Karunya UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – Nov/Dec – 2016

Code : 14FP2001
Sub. Name : Principles of Food Process Engineering

Semester : 2016-17 ODD
Duration : 3hrs
Max. marks : 100

Q. No.	Questions				Course outcome	Marks
PART-A (40X1=40 MULTIPLE CHOICE QUESTIONS)						
1.	ML ⁻¹ T ⁻¹ is the dimension of				CO2	
	a. Viscosity	b. Density	c. Volume	d. specific gravity		(1)
2.	The unit for specific surface area is				CO2	
	a. m/Kg	b. Kg/m	c. m ² /Kg	d. Kg m /s		(1)
3.	In pico gram pico is				CO2	
	a. multiple	b. submultiple	c. unit	d. dimention		(1)
4.	Intensive property is independent of				CO2	
	a. Capillarity	b. Density	c. Pressure	d. mass		(1)
5.	Pressure is an ----- property				CO2	
	a. Extensive	b. Intensive	c. extradinary	d. None		(1)
6.	Specific volume is the reciprocal of				CO2	
	a. Weight density	b. viscosity	c. mass density	d. Specific heat		(1)
7.	For gaseous mixture volume % is equal to				CO2	
	a. Mass %	b. weight %	c. Mass fraction	d. Mole %		(1)
8.	Raoult's law is applicable for ----- solution				CO2	
	a. Real gas	b. Non ideal	c. Ideal	d. Ideal gas		(1)
9.	The unit of Reynolds No is				CO2	
	a. kg m/s	b. lpm	c. m/s	d. unit less		(1)
10.	In Bernoulli equation for steady flow ----- is constant				CO2	
	a. Energy	b. Mass	c. Force	d. Momentum		(1)
11.	Under steady state condition the property of the system will not change with -----				CO2	
	a. Velocity	b. Acceleration	c. Time	d. Pressure		(1)
12.	The example for derived quantity is				CO2	
	a. Columb	b. radian	c. Force	d. length		(1)
13.	Equivalent weight is molecular weight divided by its				CO2	
	a. Atomic weight	b. Mole	c. density	d. Valency		(1)
14.	The valency of H ₃ PO ₄ is				CO2	
	a. 2	b. 3	c. 4	d. 0		(1)
15.	Moles of solute per kg of solvent is called				CO2	
	a. Molarity	b. Molality	c. Normality	d. Viscosity		(1)
16.	Fluid with no viscosity is called				CO2	
	a. Ideal solution	b. Real solution	c. Ideal fluid	d. Ideal gas		(1)
17.	Bernoulli equation is based on law of conservation of				CO2	
	a. Viscosity	b. Momentum	c. Energy	d. Mass		(1)
18.	Continuity equation is based on law of conservation of				CO2	
	a. Mass	b. Momentum	c. Viscosity	d. Energy		(1)
19.	Heat of formation of the substance in the elemental state is				CO2	
	a. 10	b. Zero	c. One	d. Two		(1)

20.	Liquids will have ----- specific heats	CO2	
	a. one b. two c.three d.four		(1)
21.	The size of the pipe line which discharge 200 liters/min of water with a velocity of 0.4 m/sec	CO2	
	a. 59 mm b. 103 mm c. 120 mm d. 100 mm		(1)
22.	Force of attraction between unlike molecules are called----- force	CO2	
	a. Vander waals b. Adhesive c. Cohesive d.Nuclear		(1)
23.	The head loss due to the sudden expansion is called	CO2	
	a. Major loss b. minor loss c. Momentum loss d. Velocity loss		(1)
24.	Darcy's equation is used to predict the	CO2	
	a. Major loss b. Momentum loss c. Heat loss d. Minor loss		(1)
25.	The smallest cross section for flow in orifice meter is called -----	CO2	
	a. Orifice b. Vena Contracta c. Throat d. Diverging cone		(1)
26.	10 ppm is equal to	CO2	
	a. 10 m ³ /g b. 10 mg/lit c. 10 g/lit d. 10 g/m ³		(1)
27.	The unit for latent heat of vapourization is	CO2	
	a. Kg/KJ b. Kcal/Kg c.Kcal/Kg K d.Kg/Kcal		(1)
28.	According to Boyle's law volume is ----- proportional to pressure	CO2	
	a.Independent of P b.Inversely c. Directly d. Indirectly		(1)
29.	The pressure correction factor in the case of real gases is	CO2	
	a. VT b. an ² /v ² c.v/n d.v ² /n ²		(1)
30.	Equilibrium vapour pressure is a function of	CO2	
	a. Density b.Viscosity c.Temperature d. Volume		(1)
31.	The specific heat capacity can be expressed as a polynomial in -----	CO2	
	a. Pressure b. Temperature c. Heat d. Energy		(1)
32.	The driving force for heat transfer at equilibrium is	CO2	
	a. 1 b.Zero c. higher d. lower		(1)
33.	The discharge co efficient for the orifice meter will be around	CO2	
	a. 0.5 b.2 c. 0.9 d.1		(1)
34.	The ratio between the actual discharge to the theoretical discharge is ----- co efficient	CO2	
	a. discharge b.Viscosity c. Shape factor d.Friction		(1)
35.	Sum of atmospheric pressure and gauge pressure is called ----- Pressure	CO2	
	a. Atmospheric b.Absolute c.Relative d. Acute		(1)
36.	Gases will show ideal behavior at ----- temperature	CO2	
	a. High b. Low c. Standard d. Room		(1)
37.	Material balance is based on law of conservation of -----	CO2	
	a. Heat b.Mass c.Pressure d.Energy		(1)
38.	For solving simultaneous equation no of equation should be equal to no of	CO2	
	a. Variables b. Constant c. Pressure d. Temperature		(1)
39.	A substance which do not take part in a unit operation is called ----- substance in material balance	CO2	
	a. Tie b. Absolute c.Critical d.Non critical		(1)
40.	In the combustion of carbon in oxygen, oxygen is the ----- reactant	CO2	
	a. Product b.Excess c.Limiting d. Non limiting		(1)

PART B(8 X 5 = 40 MARKS) (ANSWER ANY EIGHT)

41.	A force equal to 25 Kgf is applied on the piston with a diameter of 2 cm. Find the pressure exerted on a piston in KPa	CO1	(5)
42.	Show that the Reynold's no is a dimensionless quantity. The formula for Reynolds No is $N_{Re} = D\rho U/\mu$, where U is the velocity, D dia of pipe, μ viscosity and ρ density.	CO1	(5)
43.	Explain standard heat of formation with suitable example	CO1	(5)
44.	How many kilogram of CS ₂ will contain 3.5 Kmol of carbon	CO1	(5)
45.	Calculate the density of chlorine gas at 503.15 K and 152 bar using ideal gas law	CO1	(5)

46.	Determine the dia of the pipe which discharge 200 liters/min of water with a velocity of 0.4 m/s	CO1	(5)
47.	What are the three methods to solve the material balance problems	CO1	(5)
48.	Find the ratio of milk with 3.8% fat to milk with 0.5% fat that have to be mixed in order to produce a blend with 3.5% fat	CO1	(5)
49.	Find the amount of saturated steam at 270.1 kPa required to heat 100 kg of cans from 50°C to 121°C, if the heat capacity of the cans is 3.5 kJ/kg°C	CO1	(5)
50.	How many kg/h of sugar syrup with 10% sugar must be fed to an evaporator to produce 10000 kg/h of sugar syrup with 65% sugar?	CO1	(5)
PART C(2 X 10 = 20 MARKS) (ANSWER ANY TWO)			
51.	Starting from Bernoulli equation derive Darcy's equation for head loss for the fluid flowing through the pipe	CO1	(10)
52.	On the basis of the data and the chemical reactions given below, find the heat of formation of ZnSO ₄ from elements. i) Zn + S (rhomb) ----- ZnS $\Delta H = -44$ Kcal/Kg mol. ii) 2ZnS + 3O ₂ ----- 2ZnO + 2SO ₂ $\Delta H = -221.88$ Kcal/kg mole iii) 2SO ₂ + O ₂ ----- 2SO ₃ $\Delta H = -46.88$ Kcal/kg mole iv) ZnO + SO ₃ ----- ZnSO ₄ $\Delta H = -55.10$ Kcal/kg mole	CO1	(10)
53.	What are the different equation of state available discuss its merit and demerits	CO1	(10)

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