

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 : 14FP3020
Sub. Name : Engineering Properties of Food

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

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Explain the following properties of food materials 1. Size 2. Sphericity 3. Aspect ratio	COM2	10
	b.	Give the different types of porosities and Illustrate any one method to determine the porosity.	COM3	10
(OR)				
2.	a.	Explain with a neat diagram the measurement of volume of a fruit through liquid displacement method	COM3	10
	b.	Illustrate with a diagram the working principle of lactometer.	COM2	10
3.	a.	Write in brief about the following: 1. Bioyield point 2. Rupture point 3. Poisson's ratio 4. Bulk modulus	COM2	8
	b.	Give any 5 applications of rheology in food engineering	COM3	5
	c.	Illustrate with a neat sketch working of any on rotational viscometer	COM2	7
(OR)				
4.	a.	Describe the method for evaluation of adhesiveness and springiness of food materials	COM1	15
	b.	Write a note on alveograph	COM2	5
5.	a.	Derive an expression for thermal conductivity of food using Fourier's law .	COM2	7
	b.	Describe the method for estimation of thermal conductivity by Heat of vaporization	COM1	8
	c.	Write a note on thermal diffusivity	COM1	5
(OR)				
6.	a.	Explain Radial Heat Flow Methods for determination of thermal conductivity	COM2	10
	b.	Illustrate with a diagram the construction and working of Differential Scanning Calorimeter	COM2	10
7.	a.	Explain the following 1. Henry's law 2. Raoult's law 3. Boiling point elevation	COM1	10
	b.	Explain any one method of preparation of water activity sorption isotherm	COM2	10
(OR)				
8.	a.	Determine the boiling temperature of 10% (w/w) NaCl solution under atmospheric pressure. Data: Molecular weight of NaCl: 58.4 g/g-mole	COM3	8

		Enthalpy of saturated vapor: 2676.1 kJ/kg at 100°C Enthalpy of saturated liquid: 419.04 kJ/kg at 100°C R, gas constant: 8.31434 kJ/kg-mole K.		
	b.	Describe Water Activity Determination by Vapor Pressure Measurement	COM2	12
		<u>Compulsory:</u>		
9.	a.	Give the basic principle of microwave heating	COM1	10
	b.	Estimate the penetration depth of a chicken meat during processing in home type microwave oven. Chicken meat has a dielectric constant of 53.2 and dielectric loss factor of 18.1. Assume that dielectric properties are constant during heating.	COM3	7
	c.	Define dipolar rotation	COM1	3

ALL THE BEST