Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2171402 **Date: 02/05/2017**

Subject Name: Food Rheology & Sensory Evaluation

Time: 02.30 PM to 05.00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 Explain the importance of the followings with suitable example. **14**

1) Isotropic stress
2) True stress
3) Secant modulus
4) Lambert's law
5) Critical dimension
6) Saturation
7) Plasticity

Q.2 **(a)** Highlight on different types of threshold value. **03**

(b) What are different factors to be optimized before sensory evaluation? **04**

(c) Discuss Duo – Trio Test along with its applications in food industries. **07**

OR

(c) What is Test control in sensory evaluation? Explain its importance during sensory evaluation. **07**

Q.3 **(a)** What is the generalized equation for the visco-elastic material? **03**

(b) How do you differentiate shear thinning and shear thickening. Explain with the suitable examples **04**

(c) Develop generalized equation of the stress-strain in the Maxwell model. Prove that at the time of stress relaxation, stress in the body is 1/e times the initial stress. **07**

OR

Q.3 **(a)** Write a note on ultra sonic pulsed technique to find the modulus of elasticity of the biomaterial. **03**

(b) Explain the working of e-nose. Discuss its various reactive surfaces. **04**

(c) Apples (10kg) were packed in wooden box under compression. The instant load applied while packing on the first layer was 60 N. The initial and equilibrium modulus of elasticity of apple was 120 and 60 N/mm^2. Compute the time of relaxation of apples if after 24 hours elasticity of the apples was found to be 102 N/mm^2 with total deformation is 0.23 mm. Also state the importance of time of relaxation. **07**

Q.4 **(a)** What do you understand by expectation error and halo effect in sensory evaluation? **03**

(b) Explain briefly emulsion destabilization. **04**

	(c)	What are the methods to measure food color? Describe CIE system for color measurement.	**07**

OR

Q.4	**(a)**	What do you understand by dilution test?	**03**
	(b)	Highlight on classification of food emulsion on the basis of internal phase ratio (IPR).	**04**
	(c)	What are the different dynamic tests to find rheological properties of the food? Explain any one.	**07**
Q.5	**(a)**	State the effect of particle size distribution on chocolate mass behavior.	**03**
	(b)	What are different stages in training of panelists for descriptive testing?	**04**
	(c)	Discuss the applications of consumer test in food industries.	**07**

OR

Q.5	**(a)**	A confectionary has developed a dark chocolate and intended to taste the product with those of three competitors. The company likes to evaluate for order of preference. Suggest the most suitable sensory evaluation method and design sensory evaluation card.	**03**
	(b)	Draw a neat and well labeled schematic representation for Time – Force graph. Calculate cohesiveness and gumminess from the following data. i) Area of first curve – 35 mm^2 ii) Area of second curve – 15 mm^2 iii) Hardness of sample – 5 kgf	**04**
	(c)	What do you understand by casson body? Discuss the effect of lecithin, moisture content and thixotropy on rheology of chocolate mass.	**07**