

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019

Subject Code: 2171402

Date: 26/11/2019

Subject Name: Food Rheology & Sensory Evaluation

Time: 10:30 AM TO 01:00 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 (a) Define the following terms. **03**
1 Creep
2 Secant Modulus
3 Bingham plastic

Q.1 (b) Define rheology. State the significance of food rheology study. **04**

Q.1 (c) What type of fluid behavior is applicable to molten chocolate mass? Derive its mathematical expression by using Newton's viscosity law. **07**

Q.2 (a) In a resonance technique, a potato finger 60 mm long and 20 mm in diameter was tested under compression. The recorded resonant frequency obtained was 187 Hz. If the mass density of the sample is 1.98 g/cm^3 , calculate the modulus of elasticity of the sample. **03**

(b) Draw electrical equivalence of: Spring; Dashpot; Maxwell model and Kelvin Model **04**

(c) Prove that stress relaxation is 36.8% of initial stress in Maxwell Model. **07**

OR

(c) Compare leathery product and crispy product with help of force deformation curve and explain. **07**

Q.3 (a) Classify food emulsions on the basis of internal phase ratio. **03**

(b) Define HLB index. How it can be used in the selection of emulsifier for a particular food system? State the limitations of HLB index. **04**

(c) Discuss the calibration and working of E-Nose used for food analysis. **07**

OR

Q.3 (a) State the significance of the followings in sensory evaluation. **03**

i) Defining project objective

ii) Sample screening

(b) Highlight on the classification of sensory evaluation tests. **04**

(c) Discuss CIE system for food color measurement. **07**

- Q.4 (a)** Introduce the following tests used for textural measurement. **03**
- i) Fundamental Test
 - ii) Empirical Test
 - iii) Imitative Test
- (b)** XYZ company developed new packaging material for food product. Estimated shelf life in new packaging material is 7 days more than existing packaging material. The company would like to confirm overall acceptability of product packed in new packaging material by conducting sensory evaluation. Which type of sensory evaluation test will be more appropriate? Design sensory evaluation score card. **04**
- (c)** Enlist steps for training of descriptive type panel members. Discuss each steps with its significance. **07**

OR

- Q.4 (a)** State the effect of following parameters on molten chocolate mass behavior. **03**
- i) Particle size distribution
 - ii) Thixotropy
- (b)** Draw a well labeled Time vs. Force representation obtained during textural profile analysis. **04**
- (c)** Discuss psychological factors affecting sensory panel members. **07**

- Q.5 (a)** State the textural measurement principle in the following instruments. **03**
- i) Bostwick consistometer
 - ii) Tenderometer
 - iii) Farinograph
- (b)** Compare paired comparison test with ranking test of sensory evaluation. **04**
- (c)** What do you understand chain of sensory perception? Differentiate between sensation and perception in sensory evaluation. What are different controls employed to prevent biases during sensory evaluation? State the importance of each control. **07**

OR

- Q.5 (a)** What are different types of threshold value? **03**
- (b)** What do you understand by multiple sample difference test? State its application areas in food industries. **04**
- (c)** Discuss different types of food emulsion destabilization phenomena. **07**
