

GUJARAT TECHNOLOGICAL UNIVERSITY**B E Sem-VI Examination May 2011****Subject code: 161402****Subject Name: Food Rheology & Sensory Evaluation****Date: 17/05/2011****Time: 10.30 am – 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)** Write short notes on the following (ANY SEVEN) **07**
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|----------------|--------------------|------------------|
| (i) Elasticity | (ii) Rupture point | (iii) Beer's law |
| (iv) Hue | (v) Lambert's law | (vi) Extinction |
| (vii) Creep | (viii) Stiffness | (ix) Resilience |
- (b)** Justify the following statements **04**
- (i) Time of day while sensory evaluation is affecting on the results.
 - (ii) Sometimes texture is overlooked and importance is given to color and taste.
- (c)** What is Rheology? Why its study is needed? **03**
- Q.2 (a)** In a Maxwell model experiment on a specimen, it was observed that after 48 minutes decay stress and equilibrium stress are 45 and 56% of the stress at that time respectively. Compute the time of relaxation of the specimen. What is the significance of time of relaxation? **07**
- (b)** Discuss the important aspects of test control in sensory evaluation. **07**
- OR**
- (b)** What are seven stages for conducting sensory study of food product? **07**
- Q.3 (a)** Explain the working of e-nose. What are its applications in the food industry? List its limitations. **07**
- (b)** Plot the force deformation curve of chewing gum and fruit lozenge and explain. **03**
- (c)** Draw layout for sensory evaluation laboratory and show various important areas in the laboratory. **04**
- OR**
- Q.3 (a)** Explain principle and working of any one of the food color measuring instrument. **07**
- (b)** Define deviatoric stress and isotropic stress in food material with suitable examples. **03**
- (c)** Explain any four psychological factors affecting on sensory panel member. **04**
- Q.4 (a)** Explain how rheological properties can be measured with the help of mechanical and electrical analogs. Why electrical analogs are preferred over the mechanical analogs. **05**
- (b)** Explain degree of plasticity with the help of stress strain diagram of dry corn. Calculate the plasticity of fruit cake thickness 47.2 mm is pressed to 38.5 mm. after releasing the load the cake returned to the thickness of 44.8 mm. **05**
- (c)** What do you mean by composite scoring method? State its application in food industry. **04**

OR

- Q.4 (a)** Explain CIE system of color measurement. **05**
- (b)** In an ultra sonic pulse technique (frequency of 50000 Hz) an apple specimen (30mm diameter and 50 mm long) having moisture content 63% wet basis was tested. It was observed that compression wave required 25 micro seconds to travel through the specimen. If the mass density of the apple is 0.5g/cm^3 and Poisson's ratio is 0.14, calculate the Young's modulus of elasticity. **05**
- (c)** What are guidelines to design consumer questionnaire? **04**

- Q.5 (a)** Draw Time vs Force curve. Show the mentioned parameters on the curve: Brittleness, Hardness, Adhesiveness and Stringiness **07**
If first curve area is 3.48 cm^2 , second curve area is 2.42 cm^2 and hardness of sample is 9.2 N, calculate cohesiveness and gumminess of sample.
- (b)** Prove that in a Maxwell model stress at the time of relaxation is approximately 37 % of the initial stress. **07**

OR

- Q.5 (a)** Explain the importance of moisture content, fat content and emulsifier in chocolate rheology. **07**
- (b)** Develop a relationship to prove that at the time of retardation, strain in the substance is only 63.2% of the initial strain. **07**
