

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI • EXAMINATION – WINTER 2013****Subject Code: 161402****Date: 29-11-2013****Subject Name: Food Rheology and 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.
4. Plain Graph Paper is to be used.

- Q.1** (a) Answer the following questions briefly. **10**
- i) “Grading of food products is helpful for producer”. Justify the statement.
 - ii) How panel member having capriciousness leads to error in sensory evaluation?
 - iii) Why number of samples is considered foremost important in sensory evaluation?
 - iv) What do you mean by category scale?
 - v) What are resilience and mechanical hysteresis? Show them on the figure.
- (b) Differentiate between the followings. How they can be represented on the curve. **04**
- i) Visco-elastic and Visco-plastic material
 - ii) Bio yield point and rupture point of leathery product.
- Q.2** (a) Derive a generalized equation of strain at any time in the four element burger Model under constant stress. **07**
- (b) What do you understand by sensitivity test? Discuss threshold test and its application in food processing industry. **07**
- OR**
- (b) Differentiate between Hedonic rating test and triangle test used in sensory evaluation. **07**
- Q.3** (a) What are different controls employed in sensory evaluation? Explain briefly salient features of any one of them. **07**
- (b) Compare force deformation curve of hardened and unhardened cheese. **04**
- (c) “During the conduction heating of flour, it is preferred that addition of hot water is done when secant modulus of 20 to 30⁰”. What does it signifies? **03**
- OR**
- Q.3** (a) In a Maxwell set of operation, it was observed that after 45 minutes decay stress and equilibrium stress are 60 and 41% of the stress at that time respectively. Calculate the time of relaxation for the specimen. **07**
- (b) How the emulsifier content affects on the flow behavior of chocolate mass? **04**
- (c) State the principle involved in the following instrument. **03**
- i) Fibrometer ii) Haugh meter iii) Tenderometer
- Q.4** (a) Write note on human olfactory system. List different types of reactive surfaces used in the e-nose. Discuss its applications and limitations in food processing industry. **07**
- (b) What do you understand by Time Force curve of texture measurement? Calculate cohesiveness and gumminess of food product if first and second curve areas are 1.88 cm² and 1.23 cm² respectively. Estimated hardness of the food product is 5.6 N. **07**
- OR**
- Q.4** (a) During an experiment following data were recorded. As there was rise in **07**

temperature, the viscosity (Pa. s) decreased. Plot the graph. Fit the Arrhenius model ($\eta = A e^{B/T}$) and find the viscosity at 10^0C .

Temperature (K) 250 258 272 280 285 290 300

Viscosity (Pa.s) 8.55 5.07 2.18 1.48 1.08 0.84 0.51

- (b) Suggest the flow behavior for chocolate mass and derive the equation for it considering yield value. **07**

Q.5 (a) Discuss the applications of consumer test in food processing industries. **07**

(b) Explain briefly any one color measuring instrument. **04**

(c) Introduce the following terms: **03**

i) Beer's Law ii) Transmittance iii) Absorbency index

OR

Q.5 (a) Discuss Duo-Trio test of sensory evaluation along with its specific application. **07**

(b) What is sonic resonant method of dynamic test? State the importance of critical length. **04**

(c) Differentiate with example shear thinning and shear thickening process. **03**
