Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. - SEMESTER – VI • EXAMINATION – WINTER 2012

Subject code: 161402 Date: 03/01/2013

Subject Name: Food Rheology and Sensory Evaluation

Time: 02.30 pm - 05.00 pm Total Marks: 70

Instructions:

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

Q.1	**(a)**	Write brief notes on the followings (i) Fracture stress (ii) Hue (iii) Resilience (iv) Creep	**04**
	(b)	Differentiate between the followings and give suitable examples. (i) Bio yield point and Rupture point (ii) Visco elastic and visco plastic material	**03**
	(c)	What are factors should be optimized in sensory evaluation study?	**07**
Q.2	**(a)**	Develop a relationship to prove that at the time of retardation, strain in the substance is only 63.2% of the initial strain.	**07**
	(b)	What do you understand about "tristimulus" value of color? How do you get it? Explain with suitable examples.	**07**
		OR	
	(c)	What do you mean by Hedonic Rating test? State its application in food industry?	**07**
Q.3	**(a)**	What do you understand about e-nose?	**03**
	(b)	How E-nose is calibrated?	**04**
	(c)	Discuss seven tasks to be performed in sensory evaluation study of food product by sensory analyst.	**07**
		OR	
Q.3	**(a)**	Discuss Lambert's law and Beers' law of spectro photometry.	**03**
	(b)	Write shot notes on Empirical test for texture analysis.	**04**
	(c)	Discuss different steps undertaken for training of descriptive type of panel members.	**07**
Q.4	**(a)**	Stress strain curve of food A and Food B were plotted and found that initial tangent modulus is 10 and 50^{o} respectively. What inferences you can derive?	**03**
	(b)	Differentiate crisp and leathery product with help of force deformation curve and explain.	**04**
	(c)	What do you mean by threshold test? Design specimen sensory evaluation card for threshold test.	**07**
		OR	
Q.4	**(a)**	What are different scales used in sensory evaluation?	**03**
	(b)	Draw a well labeled Time – Force diagram for two bites in texture assessment.	**04**
	(c)	In an ultra sonic pulse technique a cylindrical specimen 25 mm diameter and 5 cm long was tested. The mass of the sample was 6.25 g. It was noted that at a high frequency the time required to travel a compression wave is 1.25 miliseconds. The ratio of lateral to linear strain is 0.25. Calculate the modulus of elasticity of the sample.	**07**
Q.5	**(a)**	The following data were recorded by the viscometer at a shear rate of 167s	**07**

for fruit puree. Develop the Arrhenius Equation and calculate the viscosity at 8 and 18^{o}C.

Temperature	^{o}C	-10	-5	0	2	12	22	30
Viscosity	PaS	13	10.2	8.04	7.3	4.7	3.2	2.3

(b) A distributor of frozen foods who has been marketing of distinctive type of IQF (Individual Quick Freezing) sweet corn, is planning to use a new high yielding variety, provided the new frozen variety is not distinguishable from his standard or present product in terms of appearance attributes. Suggest the most suitable sensory evaluation test to conclude a difference between two varieties apparent or not. Design specimen sensory evaluation card. **04**

(c) Briefly introduce Casson body. **03**

OR

Q.5 **(a)** A peeled and unseeded watermelon cube was put under compression test. The instant load applied was 150 g. The initial and equilibrium modulus of elasticity of the sample was found to be 2.48 and 1.81 N/cm^2 respectively. The initial and final density of the sample is 840 and 780 N/m^3. Calculate the time of relaxation of the sample if after 30 minutes elasticity is found to be 2.43 N/cm^2 and deformation of 2.13mm. **07**

(b) Discuss the effect of lecithin content and tempering on flow behavior of chocolate mass. **04**

(c) Write working principle involved in the following instruments. **03**

1. Succulometer
2. Tenderometer
3. Fibrometer

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