Enrolment No.\_\_\_\_\_

## 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.
  - 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 resilence and mechanical hysteresis? Show them on the figure.
  - (b) Differentiate between the followings. How they can be represented on the 04 curve.
    - 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 07 Model under constant stress.
  - (b) What do you understand by sensitivity test? Discuss threshold test and its 07 application in food processing industry.

OR

- (b) Differentiate between Hedonic rating test and triangle test used in sensory 07 evaluation.
- Q.3 (a) What are different controls employed in sensory evaluation? Explain briefly 07 salient features of any one of them.
  - (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 03 water is done when secant modulus of 20 to  $30^{0}$ ". What does it signifies?

## OR

- Q.3 (a) In a Maxwell set of operation, it was observed that after 45 minutes decay stress 07 and equilibrium stress are 60 and 41% of the stress at that time respectively. Calculate the time of relaxation for the specimen.
  - (b) How the emulsifier content affects on the flow behavior of chocolate mass? 04
  - (c) State the principle involved in the following instrument.i) Fibrometer ii) Haugh meter iii) Tenderometer
- Q.4 (a) Write note on human olfactory system. List different types of reactive surfaces 07 used in the e-nose. Discuss its applications and limitations in food processing industry.
  - (b) What do you understand by Time Force curve of texture measurement? 07 Calculate cohesiveness and gumminess of food product if first and second curve areas are 1.88 cm<sup>2</sup> and 1.23 cm<sup>2</sup> respectively. Estimated hardness of the food product is 5.6 N.

OR

Q.4 (a) During an experiment following data were recorded. As there was rise in 07

03

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		temperature, the viscosity (Pa. s) decreased. Plot the graph. Fit the Arrhenius	
		model ( $\eta = A e^{B/T}$ ) and find the viscosity at 10 <sup>o</sup> C.	
		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
0.5	(a)	Discuss the applications of consumer test in food processing industries.	07
C.	(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	<b>(a)</b>	Discuss Duo-Trio test of sensory evaluation along with its specific application.	07
	<b>(b</b> )	What is sonic resonant method of dynamic test? State the importance of critical	04
		length.	
	(c )	Differentiate with example shear thinning and shear thickening process.	03

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