

Seat No.: \_\_\_\_\_

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

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2020

Subject Code:2171402

Date:21/01/2021

Subject Name:Food Rheology & Sensory Evaluation

Time:10:30 AM TO 12:30 PM

Total Marks: 56

Instructions:

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain the following terms: **03**  
i. Beer's law                      ii. Transmittance                      iii. Absorbency index
- (b) Differentiate the following and show on figure: **04**  
i) Newtonian and non Newtonian fluid  
ii) Resilience and Mechanical hysteresis
- (c) Define Food Emulsion. Discuss the destabilization mechanisms of emulsion. **07**
- Q.2** (a) Describe sonic resonant method of dynamic test. **03**  
(b) Why electrical equivalence are used instead of mechanical ones for studying the rheological behavior of bio-material. **04**  
(c) Develop a generalized equation of strain at any time in the 4-element burger Model under constant stress. **07**
- Q.3** (a) Highlight on different reactive surfaces in the e-nose. **03**  
(b) "During the conduction heating of flour it preferred that addition of hot water is done during secant modulus of 20 to 30°." What does it signifies? **04**  
(c) Define Hue, value and saturation. Explain CIE system for color measurement. **07**
- Q.4** (a) State the applications of E-Nose in food industry. **03**  
(b) Differentiate shear thinning and shear thickening process with example. **04**  
(c) Draw a force deformation curve of fresh and one hour stored NAN at room temperature and discuss the various characteristics of the same. **07**
- Q.5** (a) Highlight on chain of sensory perception. **03**  
(b) What are factors to be optimized before conducting sensory evaluation? **04**  
(c) Discuss the steps for conducting sensory evaluation of food product with significance. **07**
- Q.6** (a) Draw a sensory evaluation laboratory layout. **03**  
(b) Derive casson body equation for molten chocolate mass. **04**  
(c) What are different methods of sensory evaluation? Explain threshold test with its application area. **07**

- Q.7 (a)** State the working principle in the following instruments. **03**
- i. Fibrometer
  - ii. Succulometer
  - iii. Adams Consistometer
- (b)** Highlight on the effect of particle size and fat content on rheological characteristics of molten chocolate mass. **04**
- (c)** A baker has come across with new packaging material. If this new packaging material is used, shelf life can increase by 3 days. After storage of product, the baker would like to establish the difference between existing packaging material packaged product and newer packaging material packaged product. Suggest the most suitable sensory evaluation method and design sensory score card. **07**
- Q.8 (a)** Classify the emulsion on the basis of internal phase ratio. **03**
- (b)** Differentiate between hedonic ranking test and composite scoring test. **04**
- (c)** Draw a textural profile analysis (TPA) curve for two bites simulation with well labeled attributes. **07**
- Define the following terms with TPA curve.
- i. Hardness
  - ii. Adhesiveness
  - iii. Springiness

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