

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III (NEW) EXAMINATION – WINTER 2017

Subject Code: 2131408

Date: 09/11/2017

Subject Name: Basics of Food Engineering

Time: 10:30 AM to 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 down advantages of glass packaging and flexible film. **03**

(b) Name different mills used for size reduction. State Kick's and Rittinger's law and write appropriate mathematical expressions to support your statements. **04**

(c) What do you understand by blanching? Explain different process of blanching. **07**

Q.2 (a) Define the following terms: **03**

(i) Latent heat, (ii) Sensible heat (iii) Specific heat

(b) Give a generalized flow diagram for processing of fruits. Explain the unit operations like cutting, sorting, cleaning, grading, scalping and de-stoning? **04**

(c) Discuss status and prospects of food processing in Gujarat and state the present priority sectors. **07**

OR

(c) Write the full form of PFA, FPO, ISI, BIS, ISO, APEDA and EIC **07**

Q.3 (a) Discuss the role of Condiments and Spices in food industry. **03**

(b) Explain any one cleaning or grading or sorting equipment with a neat diagram. **04**

(c) What is design of food? Discuss radiation method of preservation. **07**

OR

Q.3 (a) Explain with the help of diagram about the different phases of steam formation starting from ice to superheated steam. **03**

(b) Give the name of any one instrument which measure temperature, relative humidity, pressure respectively **04**

(c) Define the followings; **07**

1. Cleaning
2. Grading

3. Sorting
4. Dry bulb temperature
5. Latent heat
6. Filtration
7. Centrifugation

- Q.4 (a)** How much water must be added to 200 kg of concentrated juice with 65% solids to produce orange juice with 12% solid. **03**
- (b)** Discuss the followings with details **04**
1. Material and Energy balance
 2. Pasteurization and Sterilization
- (c)** List regulatory bodies in food industry. Why is it necessary to control food quality? **07**
- OR**
- Q.4 (a)** Explain recommended daily allowance of nutrients and its importance with regard to human consumption. **03**
- (b)** Write short note **04**
1. Give advantages of entrepreneurship.
 2. What is radiation method of preservation?
- (c)** What do you understand by steady state unit operations? A vegetarian food containing 15% protein, 20% fat, and 65% water and a propriety food ingredient containing 15% water, 78% fat and 5% protein are mixed thoroughly to make 100 kg of a customized product mix containing 30% fat. Draw a flow diagram representing the mixing process and set up total mass balance and component mass balance equations representing this system. **07**
- Q.5 (a)** 5000 kg/h of milk with a specific heat of 3.849 kJ/kg⁰C is entering into the heat exchanger at 15⁰C, calculate the total amount of energy. **03**
- (b)** Write short notes on recommended daily allowances for nutrients. **04**
- (c)** What do you understand by drying? Discuss the advantages of drying. **07**
- OR**
- Q.5 (a)** Discuss the causes of spoilage of food products in detail. **03**
- (b)** Draw the line diagram of psychometric chart with all notations. **04**
- (c)** Define pulping and peeling. Discuss different methods of peeling in detail. **07**
