

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER– III (NEW) EXAMINATION – SUMMER 2015**

**Subject Code: 2131408****Date: 11/06/2015****Subject Name: Basics of Food Engineering****Time: 02.30pm-05.00pm****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)** Define size reduction. State the types of meshes used for particle size measurement. What is the need of size reduction in food industries? Name popular mills used for size reduction. State Kick's and Rittinger's law and write appropriate mathematical expressions to support your statements. **07**

**(b)** What do you understand by steady state unit operations? A vegetarian food containing 15% protein, 20% fat, and 65% water and a proprietary 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.2 (a)** Write the full form of the following Acronyms and state their portfolios : **07**

- i. FSSAI
- ii. CFTRI
- iii. HACCP
- iv. NIFTEM
- v. SQF
- vi. FPO
- vii. AOAC

**(b)** Why is it required to study psychrometric properties of air? Explain the following: **07**

1. Wet bulb temperature
2. Relative humidity
3. Dry air
4. Specific humidity
5. Saturated air
6. Latent heat

**OR**

**(b)** Write brief notes: **07**

1. Elements of Entrepreneurship
2. Food industry status in India
3. Food preservation by heating
4. Food preservation by cooling
5. Drying of foods

- Q.3 (a)** Explain the following terms in context: **07**
1. Components of food
  2. Pasteurization
  3. Blanching
  4. Preservatives
  5. Sea foods
  6. RTE foods
  7. Food nutrition

- (b)** Define food quality and state its significance? Name some standards which deal with regulating food quality in India. **07**

**OR**

- Q.3 (a)** List regulatory bodies in food industry. Why is it necessary to control food quality? Explain recommended daily allowance of nutrients and its importance with regard to human consumption. **07**

- (b)** Answer the following in short: **07**
- a. What is meant by food design?
  - b. What is the present status of food industry in India?
  - c. Give measures to prevent food loss.
  - d. List some methods of preserving foods.
  - e. What is the scope of entrepreneurship in food industry?
  - f. What is radiation processing?
  - g. Define moisture content.

- Q.4 (a)** Answer the following: **07**
- (i) What is carbohydrate?
  - (ii) Give function of fat in human system.
  - (iii) What is the role of enzymes in food metabolism?
  - (iv) What are sensory qualities of foods?
  - (v) Define sterilization.

- (b)** Discuss status and prospects of food processing in Gujarat and state the present priority sectors. Explain the meaning of cold chain. **07**

**OR**

- Q.4 (a)** What are unit operations? What is the need of process instrumentation and control in food industry? Name instruments employed for measurement of temperature, humidity, fluid flow, pressure and density. **07**

- Q.4 (b)** Name the most important components of fruits, vegetables, cereals and oil and oil seeds. How will you formulate and develop a food product of high nutritional value? **07**

- Q.5 (a)** Give a generalized flow diagram for processing of fruits. Explain the unit operations like cutting, sorting, cleaning, grading, scalping and de-stoning? Explain any one cleaning or grading or sorting equipment with a neat diagram. **07**

- (b)** Answer the following questions: **07**
- i. What are functional foods?
  - ii. What are soft drinks?
  - iii. What are basic components of milk?

iv. Name food products rich in protein.

**OR**

- Q.5** (a) Explain the following: **07**
- a) Pulping and finishing.
  - b) Tempering.
  - c) Peeling methods.
  - d) Centrifugation.
- (b) Discuss the following: **07**
- a) Hot water blanching and its purpose.
  - b) Homogenization.
  - c) Spoilage Microorganisms
  - d) Heat Convection

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