

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-III(New) EXAMINATION – SUMMER 2016

Subject Code:2131405**Date:27/05/2016****Subject Name:Introduction to Food Processing Technology****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)** Define following terms **05**
1. Food
 2. Shelf Life
 3. Quality
 4. Food Processing
 5. Food Additive
- (b)** Give the full form of following **05**
- a. FSSAI
 - b. RDA
 - c. NIN
 - d. MOFPI
 - e. NIFTEM
- (c)** Fill in the blanks **04**
- i. ----- protein is used as reference protein while calculating PDCAAS of any food protein.
 - ii. The process of conversion of complex form of food nutrients into simple form is known as -----
 - iii. ----- is the example of un-distilled beverage obtained from barley.
 - iv. Texture of food can be objectively measured by using ----- instrument.
- Q.2 (a)** Explain the physiological functions of food **03**
- (b)** Enlist the challenges faced by Indian Food Industry. **04**
- (c)** Describe different sectors of Indian food industry. **07**
- OR**
- (c)** Write a detailed note on initiatives taken by government for growth of Indian Food Industry. **07**
- Q.3 (a)** Explain different levels of food processing with suitable examples. **03**
- (b)** How individual nutrient variability affects on RDA value? **04**
- (c)** Describe the advantages of processing of food. **07**
- OR**
- Q.3 (a)** Enlist various principles used to determine RDA value. **03**
- (b)** What guidelines are given with respect to intake of dietary fat for Indians? **04**
- (c)** Describe the methods used to evaluate quality of dietary proteins. **07**
- Q.4 (a)** Define the followings; **03**
1. Dew point temperature
 2. Specific volume
 3. Enthalpy
- (b)** Discuss the Rittinger's, Bonds and Kick's Law in size reduction. Also draw stress-strain diagram to identify the types of material. **04**
- (c)** Differentiate between cleaning and grading. Explain the working principle of hand operated double screen grain cleaner and seed grader with diagram. **07**

OR

- Q.4 (a)** In the concentration of orange juice a fresh extracted and stained juice containing 7.08% solid is fed to an evaporator. In the evaporator, water is removed and the solids content increased to 58% solids. For 1000 kg/h entering, calculate the amounts of the outlet streams of concentrated juice and water. **03**
- (b)** Differentiate between **04**
1. Abrasion peeling and Caustic peeling
 2. Dry bulb temperature and Wet bulb temperature
- (c)** A retort and 2000 cans of tuna fish have been heated to a uniform temperature of 116°C . It is desired to cool the cans to 35°C before removing them from the retort. How much cooling water is required if it enters the retort at 20°C and leaves at 30°C . Given **07**
- Specific heat of tuna fish = $3.65\text{kJ/kg}^{\circ}\text{C}$
Specific heat of can wall = $0.46\text{kJ/kg}^{\circ}\text{C}$
Specific heat of water = $4.18\text{kJ/kg}^{\circ}\text{C}$
Mass of tuna fish/can = 450gm
Energy required to cool retort = 75000KJ
Mass of can wall/can = 55g
- Q.5 (a)** Give the importance of instrumentation and control in food industry. List out the equipments used for temperature measurement, flow measurements and pressure measurements. **03**
- (b)** What is drying? How it helps in preservation? Discuss different advantages of drying. **04**
- (c)** Discuss the followings in details **07**
1. Criteria based on which, cleaning and grading equipments are classified
 2. Importance and Advantages of material handling
 3. Importance of size reduction in food industries

OR

- Q.5 (a)** Explain the followings; **03**
1. Formation of superheated steam
 2. Steam blanching
 3. Drying and Dehydration
- (b)** State the use of psychometric chart in food processing. Draw a neat labelled diagram of psychometric chart indicating various variables. **04**
- (c)** A continuously operated rotary drier is used to dry 12 kg/min of a starch-based food containing 25% moisture (wet weight basis) to give a product containing 10% moisture. However, the drier cannot handle feed material with moisture content greater than 15% and therefore a proportion of dry product must be recycled and mixed with the fresh feed. Calculate the evaporation rate and the recycle ratio. **07**
