

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– III (New) EXAMINATION – WINTER 2019****Subject Code: 3131405****Date: 28/11/2019****Subject Name: Introduction to Food Processing Technology****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.

- Q.1**
- (a) What are the major sectors of Indian food industry? **03**
 - (b) Write the principles of food preservation. **04**
 - (c) A food mix is to be made that would balance the amount of methionine (MET), a limiting amino acid in terms of food protein nutritional value, by blending several types of plant proteins. Corn, which contains 15% protein, has 1.2 g MET/100 g protein; soy flour with 55% protein has 1.7 g MET/100 g protein; and non fat dry milk with 36% protein has 3.2 g MET/100 g protein. How much of these ingredients must be used to produce 100 kg of formula that contains 30% protein and 2.2 g MET/100 **07**
- Q.2**
- (a) Classify food on the basis of pH. **03**
 - (b) Write Short notes on **04**
 - (i) HTST Pasteurization
 - (ii) Modified Atmosphere Packaging
 - (c) What the the challenges and opportunity for the Indian food industry? **07**
- OR**
- (c) A single strength (fresh) mango juice with 10 % soluble solids is concentrated to 55% soluble solids in an evaporator. To improve the flavour of the final product, a certain amount of single strength juice is added to the concentrated juice so that the concentration of the final mixture becomes 40%. If the inlet juice flow rate is 1200 kg/h fresh juice, calculate **07**
 - (i) Water evaporation rate.
 - (ii) How much fresh juice per hour is being added back?
 - (iii) Rate of production of final product.
- Q.3**
- (a) Define the Base, Derived and Supplementary units. **03**
 - (b) What do you understand by the following terms **04**
 - 1. Peeling
 - 2. Evaporation
 - 3. Relative humidity
 - 4. Dry bulb temperature
 - (c) List out the properties of psychometric chart. Draw a neat labelled diagram of psychometric chart indicating various variables. **07**

OR

- Q.3** (a) Name three regulations framed by FSSAI. **03**
 (b) What are the advantages of blanching? **04**
 (c) What is freezing? How is freezing different from chilling? Explain in details the different method of freezing? **07**
- Q.4** (a) Define D, F and Z value. **03**
 (b) Explain in brief the drying of food materials. What are the advantages of drying of food materials? **04**
 (c) What is canning? Draw and explain the flow chart for canning. **07**
- OR**
- Q.4** (a) Why size reduction is important in food processing? Explain with justification. **03**
 (b) Explain the working of hammer mill with diagram. **04**
 (c) Calculate the amount of cooling water required to cool a liquid food paste at the rate 200kg/hr containing 30% solids from 80⁰C to 20⁰C in a counter flow heat exchanger. The increase in temperature of water is not allowed to exceed 10⁰C. The specific heat of liquid food paste is 3.0 and water is 4.2kJ/kgK. **07**
- Q.5** (a) What are mega food parks? **03**
 (b) What are the methods for the evaluation of food quality? Explain any one of them. **04**
 (c) What is food spoilage? What are the major causes of food spoilage? Explain the chemical causes of food deterioration. **07**
- OR**
- Q.5** (a) Explain the usages of steam table. Describe the stepwise procedure for the formation of superheated steam. **03**
 (b) The temperature of three different food products A, B and C of equal mass are 12, 19 and 28⁰C respectively. The temperature when A and B are mixed is 16⁰C and when B and C are mixed is 23⁰C, what would be the temperature when A and C are mixed. **04**
 (c) Define the process of diffusion. Discuss the applications of diffusion in food industry. **07**
