

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-IV • EXAMINATION – SUMMER 2013

Subject Code: 141405**Date: 17-06-2013****Subject Name: Principles of Food Engineering****Time: 10:30am – 01:00pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q1** (a) Explain the effect of radiation on food (07)
 (b) Explain physical properties of food materials (07)
- Q2** (a) Explain the physiological functions of food (07)
 (b) Enlist and explain the different process of irradiation. (07)
- OR**
- (b) Explain heat and mass balance system. (07)
- Q3** (a) Write the important requirements of food package. (07)
 (b) Discuss the relationship between the water activity and shelf life of food. (07)
- OR**
- Q3** (a)(i) What is unit operation? Explain drying process (04)
 (ii) Define / explain the following (any three) (03)
 Evaporation, Homogenization, Separation, Distillation
- (b) Explain food spoilage due to temperature and moisture (07)
- Q4** (a) Explain the controlled atmosphere storage for fruits. (07)
 (b) Explain the importance and process of aspects packaging of food . (07)
- OR**
- Q4** (a) What is heat transfer? Explain heat conduction and convection system. (06)
 (b) Answer the following (Any Four) (08)
 What is heat transfer coefficient?
 What is mass transfer?
 What is heat exchanger?
 What is freezing?
 Explain heat penetration in food.
- Q5** (a) Define food spoilage. Enlist the causes of food spoilage and explain microbial spoilage in detail. (07)
 (b) Enlist the nutritional constituents and briefly discuss the function of food. (07)
- OR**
- Q5** Write short notes on the following (Any Two) (07)
 Food processing by heat application.
 Mechanical properties of food materials.
 Sieving separation.
- Q5(b)** Sugarcane juice containing 15% solid sugar is concentrated to 70% solid concentrated juice in an evaporator. The juice entering rate is 1000 kg/hr calculate the concentrated juice produced and moisture removed using mass balance. (05)
- What are rheological properties? (02)
