

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019****Subject Code: 2171404****Date: 03/12/2019****Subject Name: Food Packaging 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 the following terms. **03**  
i) Cullet  
ii) Food Packaging  
iii) Degree of polymerization
- (b) State the effect of followings on the properties of packaging material. **04**  
i) Ethylene copolymer coating on BOPP  
ii) Increasing the distance between repeating polar –CONH– groups in nylon  
iii) Nitrocellulose coating on cellophane  
iv) Addition of cobalt during glass manufacturing
- (c) List out basic types of metal plates used for food packaging. What are precautionary and technical measures to be taken while placing the order of metal cans to a manufacturer? **07**
- Q.2** (a) How food packaging improve sales? **03**
- (b) What are ideal characteristics of food packaging material? **04**
- (c) Derive the relationship between bulk density, true density and porosity with respect to food packaging. **07**
- OR**
- (c) Explain the possible hazards and suggest step by step suitable packaging material for dairy products **07**
- Q.3** (a) Labeling is preferred over container printing under many circumstances. Justify the statement. **03**
- (b) Highlight on the advantages and limitations of aluminum containers. **04**
- (c) Food product is filled with 32% porosity in a container. In one batch the porosity was observed to be 28%. Calculate how much more or less percentage of food product was filled in each container? What are its consequences? **07**

**OR**

- Q.3** (a) Differentiate between LDPE and HDPE. **03**
- (b) What are components of Form Fill and Sealing machine? **04**
- (c) Discuss the process of paper manufacturing with the functions of each step. **07**
- Q.4** (a) What are functional layers in laminates used for food packaging? **03**
- (b) What do you understand by blister packaging? **04**

- (c) Differentiate between gravitational filling and metering filling. Explain low vacuum filling system used for liquid food product with a neat and well labeled diagram. **07**

**OR**

- Q.4** (a) Logistical packaging adds value. Justify the statement. **03**  
(b) Briefly highlight on the properties of Glass with respect to food packaging. **04**  
(c) Define Half value period (HVP). Explain HVP determination of packaged food product and its application in shelf life estimation. **07**
- Q.5** (a) Draw a well labeled sketch of Double seam cross section in tin plate container. **03**  
(b) Define aseptic packaging. What are the advantages and limitations of aseptic packaging? **04**  
(c) What do you understand by active packaging and intelligent packaging? Discuss types of active packaging films with its active component, mode of action and application areas. **07**

**OR**

- Q.5** (a) Why nutritional labeling is mandatory in food packaging? **03**  
(b) Briefly explain the mechanisms for edible film formation. **04**  
(c) Define thermoplastic. Discuss the properties and food packaging application of EVOH, PVC and cellulose acetate. **07**

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