

**B. E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING EXAMINATION, 2022**

(3rd Year, 2nd Semester )

**FOOD PACKAGING TECHNOLOGY**

Time : Three hours

Full Marks : 100

(50 marks for each Part)

Use separate Answer Script for each Part

**PART I (50 Marks)**

Answer any four of the following questions ( 4 x 12.5 = 50)

1. (a) Define packaging. Explain 'primary', 'secondary' and 'transit' packaging with suitable example of each.  
 (b) Discuss on the basic objectives of food packaging citing proper example for each.  
 (c) Name two rigid and two flexible food packaging materials.  
 (d) Name different types of closures (2+3)+3+2+2.5
  
2. (a) Mention the drawbacks of using plastics as food packaging material  
 (b) Write the full forms and numerical symbol used for the following plastics : PVC, HDPE, PET and PS  
 (c) What are the advantages of using Al as packaging material  
 (d) What should be the criteria for 'ideal packaging' for food articles? 2+ (4x1.5) + 2 + 2.5
  
3. (a) Depict the material of construction of can wall for both tin plate and TFS cans  
 (b) Draw a neat sketch of double seam arrangement of a can and label properly.  
 (c) What are basic objective of exhausting in canning operation?  
 (d) What are 'use by' and 'best before' dates mentioned on various packages. (1.5x2) +5.5+2+2
  
4. (a) Write the raw materials used for manufacturing glass as packaging material  
 (b) How would you prepare purple and yellow glass?  
 (c) What is 'gob' ?  
 (d) Write the differences between two glass moulding processes.  
 (e) What are objectives of (i) annealing and (ii) surface coating in glass manufacture. ?  
 (f) Draw a neat sketch of a glass packaging bottle and label different parts properly. 2+2+1+2+3+2.5
  
5. (a) Give example of each of the following types of plastics: thermosets, elastomers and thermoplastics.  
 (b) What are the limitations of blow and injection plastics moulding operations?  
 (c) Write short note on Plastics processing through Extrusion technology .  
 (d) Mention how vegetarian and non vegetarian food items are labelled. 3+ 3+ 4.5 + 2

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## B.E (FTBE) THIRD YEAR, SECOND SEMESTER EXAMINATION 2022

FOOD PACKAGING TECHNOLOGY

TIME: 3 H

FULL MARKS = 100

## PART- II (50 MARKS)

ANSWER Q1 AND ANY TWO FROM THE REST

USE SEPARATE ANSWER SCRIPT FOR EACH PART

Q1. Comparatively evaluate the following with examples (any 5):

5 × 4 = 20

- a. Counter pressure method vs. Differential pressure method of retorting
- b. Al foil pouch vs. Al foil trays
- c. Retort technology vs. *Sous vide* technology for vegetable curry
- d. Packaging of cocoa Beans vs. cocoa Powder
- e. Absorption type vs. Generation type of sachets
- f. Packaging of Regular milk vs. Long life milk

Q2. a. 1 Kg of packaged IQF jumbo prawns (average size of 8 cm each) during transit had its temperature raised to 20 °C and then transported through POLARSTREAM maintained at -20 °C.

Discuss the packaging of the IQF prawns for:

- i) Individual package 3
  - ii) Bulk package for POLARSTREAM 3
- b. Provide examples of food products where PET is used 'singly', 'as part of a laminate' and as 'coated films'. 6
- c. Critically analyze the properties of Al foil, BOPP and EVA with reference to 'spice' packaging. 3

Q3. Consider unfrozen jumbo prawns. Discuss the packaging laminate composition and the packaging technologies involved (with block/schematic diagrams, flow sheets etc.) wherever applicable when the uncooked jumbo prawns are subjected to (any 5): 5 × 3 = 15

- i) Retorting
- ii) Retorting in brine
- iii) Gas-packaging
- iv) FFS packaging
- v) Smart packaging (to indicate bacterial spoilage to consumers)
- vi) Active packaging to prevent blackening

- Q4.** a. Enumerate the outstanding properties of a *BOPP film* as a food packaging material considering all (eleven) properties of a packaging material. What modification would you suggest in BOPP to enhance its strength? **7 + 2 = 9**
- b. What is the difference in packaging composition between a 'bottle' of vegetable oil and 'pouch pack' of vegetable oil? **3**
- c. Retorting is an advancement over canning. Justify. **3**