

# 17654

**21415**

**3 Hours / 100 Marks**

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.  
(2) Answer each next main Question on a new page.  
(3) Illustrate your answers with neat sketches wherever necessary.  
(4) Figures to the right indicate full marks.  
(5) Assume suitable data, if necessary.  
(6) Abbreviations used convey usual meaning.

**Marks**

**1. Answer any FIVE of the following:**

**20**

- a) Explain role of plastics in packaging.
- b) Write salient features of medical packaging regulations for plastics.
- c) Explain distribution hazards associated with plastic packaging.
- d) 'Heavy metals have to be excluded in plastic packaging'. Explain why.
- e) What is 'Multilayer' food packaging. Explain its use.
- f) Care and precautions are to be taken in using recycled plastics for food packaging. Explain.
- g) Explain 'recycling rates' for plastics packaging.

P.T.O.

**2. Answer any FOUR of the following:****16**

- a) State properties and applications of polyolefins plastics in packaging application.
- b) 'Polyesters are widely used in packaging.' Explain why.
- c) Write properties and applications of Nylons as used for packaging application.
- d) Describe feedstock recycling.
- e) Write typical monomer ratio of ethylene vinyl acetate co polymer as used in packaging application. Write application areas where such packaging is used.
- f) Write properties and applications of polyvinylene di chloride in packaging applications.

**3. Answer any FOUR of the following:****16**

- a) Write technical characteristics of flexible packaging.
- b) Name various pouches used in flexible packaging. Describe any one.
- c) Explain use of bulk and heavy duty bags for packaging.
- d) Describe a sealing technique used for flexible packaging.
- e) Describe a method to evaluate 'seals' in flexible packaging.
- f) Name various techniques of flexible packaging for food products. Explain any one technique.

**4. Answer any FOUR of the following:****16**

- a) Explain role of skin packaging in modern days business.
- b) Define 'blister' packaging. State advantages of blister packaging in pharma business.
- c) Why are thermo forming fill seals popular in food packaging?
- d) Explain with examples use of rigid plastic packaging for bulk packing of chemicals and solvents.
- e) Name environment issues related to plastic packagings.
- f) Describe recycling of PET plastics.

**5. Answer any FOUR of the following:****16**

- a) Describe injection moulding process for friction clouser lids and caps.
- b) Outline injection moulding process for filament and overlap clousers.
- c) Explain meaning of 'coinjection blow moulding'.
- d) Describe foam blow moulding process.
- e) What do you mean by aseptic blow moulding? State advantages of aseptic packaging.
- f) Explain principle of vacuum and gas packaging.

**6. Answer any FOUR of the following:****16**

- a) Explain principle of extrusion coating.
  - b) Describe hot-melt lamination process.
  - c) Explain the commercial importance of adhesive lamination.
  - d) What is vacuum metallising? Why is it useful for packaging.
  - e) Write stepwise procedure to conduct 'drop test' for a container.
  - f) Explain, giving examples; advantages of using biodegradable plastics for packaging.
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