

22454

12425

03 Hours / 70 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) Use of Non-programmable Electronic Pocket Calculator is permissible.  
(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.  
(8) Use of Steam tables, logarithmic, Mollier's chart is permitted.

**Marks**

1. **Attempt any FIVE of the following :** **10**
- a) Enlist the advantage of plastic used as packaging material.
  - b) Define flexible packaging and state any two products for which it used.
  - c) Name any two plastic material used for plister packaging and any one product of which it used.
  - d) State the principle of hot melt scaling techniques.
  - e) Name any two plastic product for which vibration test is carried out.

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- f) Enlist the packaging hazardous of using plastic as packaging material.
- g) Name any two plastic packaging application for which migration test is carried out.

**2. Attempt any THREE of the following : 12**

- a) State and explain with example criteria to be used plastic packaging material for food application.
- b) Define foam. Name any two processing method to manufacture foam and write properties and applications of PU foam.
- c) Explain with neat sketch screen printing techniques and name any one commercial product for which screen printing is used.
- d) Name plastic product for which stack load test is carried out and describe it in brief.

**3. Attempt any THREE of the following : 12**

- a) State properties and application of following two packaging material –
  - i) PVDC
  - ii) EVON
- b) Describe with neat sketch the cast film manufacturing process and name any one product for which it is used.
- c) Name the blow molding process is used to store edible oil bottle of five liter with handle and explain process in brief with neat sketch.
- d) State the properties of shrink film material used to manufacture shrink film and application of shrink film.

**4. Attempt any THREE of the following : 12**

- a) State properties and application of following plastic material used in packaging.
  - i) PET
  - ii) PA
- b) Compare the properties cast film and blow film.
- c) Enlist the different type of thermoforming process. Name any two plastic material used in thermoforming process. State any four thermoforming product used in daily used.
- d) State principle of vacuum metallising and explain process with neat sketch.
- e) Explain drop test used for plastic product. Write it's importances with respect to its application.

**5. Attempt any TWO of the following : 12**

- a) Write advantages of flexible packaging and usefulness of flexible packaging with respect to following aspect.
  - i) Aseptic
  - ii) Vacuum
  - iii) Durability
- b) Classify the plastic foam. Write properties and application of PS foam.
- c) Explain the "form fill seal." Classify it and name product for which it is used.

**6. Attempt any TWO of the following :****12**

- a) State the advantage of using multilayer film in food packaging. Name any two food product in which multiplayer film are used. State the plastic material used for film and sequence of layer of film along with property associated with material and sequence.
  - b) Name blow molding process used for 250 ml shampoo bottle and explain it in brief.
  - c) Enlist the different types of printing techniques and explain flexographic printing technique with neat sketch.
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