

314348

24225

3 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

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

**10**

- (a) State the need of packaging.
- (b) Name any four plastics used in flexible packaging.
- (c) List any four thermoforming techniques.
- (d) Name any two important gases used in modified atmosphere packaging.
- (e) List any four packaging products made with rigid packaging.
- (f) List any four sealing methods.
- (g) State the significance of stack load test.

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

**12**

- (a) Mention the important characteristics of polymer for packaging purpose.
- (b) State any four advantages and any four applications of multilayer film in packaging.



- (c) Suggest the type of intermittent extrusion blow moulding process where polymer melt get stored in accumulator and processed through die whenever needed. Explain the process with neat diagram.
- (d) Describe skin packaging method.

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

**12**

- (a) Justify the statement, “medical packaging is most crucial and ample care should be taken while medical packaging”.
- (b) Describe vacuum packaging method with neat diagram.
- (c) Describe vacuum snap back forming with neat diagram.
- (d) Suggest the sealing method where two polymeric components get welded by frictioning with each other. Draw a diagram and explain its procedure.

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

**12**

- (a) Describe blown film extrusion with neat diagram.
- (b) Describe continuous extrusion blow moulding type where moulding stations turret on rotating table. Draw and explain process.
- (c) Describe ultrasonic welding method with neat diagram.
- (d) Describe solvent stress crack resistance test. State its significance in packaging.
- (e) “Static charges could cause hazards in packaging industry.” Justify the statement. Suggest the methods to overcome the static problem.

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

**12**

- (a) List any four important properties and any four important packaging applications of following polymers :
  - (i) PP
  - (ii) LDPE
  - (iii) PET

- (b) Describe cast film extrusion process. Draw a neat labelled diagram. State any four important properties and any four applications of cast film.
- (c) Identify the printing processes where cloth screen is used in printing. Draw and explain its three types.

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

**12**

- (a) Describe manufacturing of thermocol sheet. State the important properties and applications of thermocol sheet.
  - (b) Describe vertical form-fill seal technique. Draw a neat labelled diagram. State its any four packaging applications.
  - (c) State the basic difference between overall migration and specific migration. State what could be the impact of migration on food packaging.
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