17654

16172

3 Hours / 100 Marks Seat No. | | | | | | | | |

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 : **4 × 5 = 20**

(a) Write down any four important advantages of plastics packaging.

(b) Write important properties and applications of HMW-HDPE with respect to packaging.

(c) Explain three side seal pouches and four side seal pouches.

(d) Name the process used in cushioning. Explain it with suitable example.

(e) Write salient features of biodegradable plastics.

(f) Write four important applications of foam blow molding.

(g) Explain extrusion coating line for paper/polyethylene laminate.

2. Attempt any TWO : **8 × 2 = 16**

(a) Write requirements of medical packaging. What are the limitations of recycled plastics for food packaging ?

(b) Write properties and applications of PET, PC, PVDC and fluoropolymers related to packaging.

(c) Explain the principle, manufacturing process of Blister packaging with neat sketch. Also write advantages and limitations of blister packaging.

3. Attempt any TWO : **8 × 2 = 16**

(a) Explain pillow pouches, stand up pouches, shrink wrap and write in brief their manufacturing.

(b) State the impacts on environment by plastics. Explain 4 R technology to reduce it.

(c) Explain the injection molding process for threaded clousers with neat sketch.

4. Attempt any TWO : **8 × 2 = 16**

(a) Write regulations of food and medical packaging.

(b) Explain the process for manufacturing of heavy duty bags with neat sketch and list down the polymeric materials used in it.

(c) Explain coinjection blow molded process with neat sketch. Write its purpose and list down the polymeric materials used in coinjection blow molding.

5. Attempt any TWO : **8 × 2 = 16**

(a) Give the proper reason for following plastic materials being used in following applications :

	Materials	**Applications**
(i)	LLDPE	Film
(ii)	HDPE	Edible oil container
(iii)	PP	Woven sack
(iv)	PET	Drinking bottle
(v)	PC	Street light cover
(vi)	EVA	Shoe sole
(vii)	PVDC	Barrier film
(viii)	EPS	Cool cage

(b) (i) Compare flexible packaging with rigid packaging by giving at least four points.

(ii) Explain energy conservation by plastic waste.

(c) Explain the procedure and significance of stock load test for 500 litre container.

P.T.O.

6. Attempt any TWO : **8 × 2 = 16**

(a) (i) Explain the extrusion process for multilayer film.

(ii) Describe a method to evaluate 'seals' in flexible packaging.

(b) (i) Describe recycling of PET plastics.

(ii) Explain vacuum and gas packaging.

(c) Explain the process of hot melt lamination and vibration test.

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