

22488

22232

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.
  - (7) Abbreviations used are their usual meaning.

**Marks**

**1. Attempt any FIVE :**

**10**

- (a) Define Waste and Waste Management.
- (b) State 4R terminologies.
- (c) Enlist any four additives used for improving the properties of polymer waste.
- (d) State the full form of PET, HDPE, PP and PVC.
- (e) State any four applications of recycled HDPE.
- (f) Enlist the four segments of environment.
- (g) State any two examples of renewable and non-renewable energy resources each.



**2. Attempt any FOUR :****12**

- (a) Enlist any six hazards to environment due to accumulation of polymer waste.
- (b) State any six steps involved in Polymer Waste Management.
- (c) Explain with neat figure the Air classifier for sorting of waste polymers.
- (d) Explain the shredding of polymer waste by impact and shearing method with neat figure.
- (e) State any three applications of recycled PET and recycled PP each.

**3. Attempt any FOUR :****12**

- (a) Define pollution and pollutant with their types.
- (b) Explain trench landfilling method with neat figure.
- (c) Enlist any six recycling codes with their symbols.
- (d) Describe granulation of waste polymer with neat figure.
- (e) Define Minerals. State any four of its uses.

**4. Attempt any THREE :****12**

- (a) Explain four sources of polymer waste with suitable examples.
- (b) Enlist any four applications of PHA and PHB each.
- (c) Explain float and sink method with neat figure.
- (d) Explain melt spinning process with neat figure.
- (e) Describe natural ecosystem with suitable examples.

**5. Attempt any THREE :****12**

- (a) Describe the test to measure resistance of polymer to biodegradation by fungi.
- (b) Describe glycolysis process of recycling for waste polymer.
- (c) Enlist four applications of recycled PVC in building construction, packaging and clothing.
- (d) State any four applications of recycled LDPE in film products and other products each.
- (e) List any four applications of recycled ABS and recycled nylon each.

**6. Attempt any TWO :****12**

- (a) Explain with neat figure the separation of waste polymer by magnetizability.
  - (b) Describe pyrolysis for recovery of fuel from waste polymers.
  - (c) Explain the causes, effects and control measures for air pollution.
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