

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V(New) • EXAMINATION – WINTER 2016

Subject Code:2152303

Date:19/11/2016

Subject Name:Plastics Recycling & Waste Treatment

Time:10:30 AM to 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

MARKS

- | | | MARKS |
|------------|---|-----------|
| Q.1 | Short Questions | 14 |
| 1 | The recycling code for PET and PP is _____ & _____. | |
| 2 | Define pyrolysis. | |
| 3 | What are nuisance plastics. | |
| 4 | Tertiary recycling is the recovery of chemicals from waste plastics (True or False) | |
| 5 | What is depolymerisation? | |
| 6 | Define primary recycling? | |
| 7 | Write any two technical problems encountered in primary recycling. | |
| 8 | List the four physical properties of solid waste used as a basis for separation process. | |
| 9 | In primary recycling the size reduction is usually accomplished with the use of _____. | |
| 10 | Sink/float method uses the basis for difference in particle size of plastics (True or False) | |
| 11 | _____ is one of the technique used for granulating difficult materials. | |
| 12 | _____ & _____ are the products obtained by the thermal decomposition of PVC. | |
| 13 | What is incineration? | |
| 14 | List the two main techniques for landfilling. | |
| Q.2 | (a) Write a short note on sources of plastics waste. | 03 |
| | (b) Explain the Union Carbide's technique for granulating difficult materials. | 04 |
| | (c) Explain the plastics cycle with a neat flow diagram. | 07 |
| | OR | |
| | (c) Write a short note on granulators used in primary recycling. | 07 |
| Q.3 | (a) Explain briefly the recycling of HDPE containers. | 03 |
| | (b) Write a short note on use of plastics waste as fillers | 04 |
| | (c) Explain various size reduction methods for municipal solid refuse. | 07 |
| | OR | |
| Q.3 | (a) Describe the identification codes with properties and applications for plastics. | 03 |
| | (b) Explain the in-line automatic recycling system for primary recycling of waste plastics. | 04 |
| | (c) List the various separation methods of paper/plastic mixture and explain any one in detail. | 07 |

- Q.4** (a) Explain plastics waste management with the help of four R's. **03**
(b) List the problems encountered in incineration of pure plastic waste. **04**
(c) Explain the float/sink separation method for separating mixtures of plastics. **07**

OR

- Q.4** (a) Write a short note on in-line PVC scrap recycling. **03**
(b) Write briefly about environmental implications of recycling of plastics. **04**
(c) Explain the parts of a typical incinerator. **07**

- Q.5** (a) List the problems encountered in pyrolysis of plastics. **03**
(b) Explain the types of pyrolysis systems. **04**
(c) Explain recycling by co-extrusion and co-injection molding. **07**

OR

- Q.5** (a) Write a short note on sanitary landfill technique. **03**
(b) Explain the Union carbide apparatus for continuous pyrolysis of plastics. **04**
(c) Write a short note on pyrolysis process and list its advantages. **07**
