**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI**
**(MID SEMESTER EXAMINATION SP/2023)**

**CLASS: B.TECH.** **SEMESTER: IV**
**BRANCH: CHEMICAL ENGINEERING** **SESSION: SP/2023**

**SUBJECT: CL233 WASTE MANAGEMENT**

**TIME: 02 Hours** **FULL MARKS: 25**

**INSTRUCTIONS:**
**1. The question paper contains 5 questions each of 5 marks and total 25 marks.**
**2. Attempt all questions.**
**3. The missing data, if any, may be assumed suitably.**
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

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| Q.1(a) | Explain the integrated solid waste management system hierarchy. | [2] | 1 | 2 |
| Q.1(b) | State the duties of waste generators as described in solid waste management rules, 2016. | [3] | 1 | 1 |
| Q.2(a) | List down the different composting technologies. | [2] | 1 | 1 |
| Q.2(b) | Briefly describe the bio-methanation process. | [3] | 1 | 2 |
| Q.3(a) | Classify plastics as per SPI code or resin identification number. (In 1988, the Society of the Plastics Industry (SPI) established a classification system to help people recycle and dispose of their plastics properly. Today, manufacturers follow this coding system and place a number or SPI code on each product.) | [2] | 2 | 1 |
| Q.3(b) | Define the following terms: (1) E-Factor, (2) Atom Economy, (3) Biodegradable plastics, (4) Thermoplastic, (5) Solvent Intensity, (6) Waste Water Intensity. | [3] | 2 | 2 |
| Q.4 | Propose one approach by which postindustrial and postconsumer multilayer plastic waste may be recycled. | [5] | 2 | 2 |
| Q.5(a) | What is E-waste? List the different electrical and electronic equipment categories covered under the E-Waste (Management) Rules, 2022. | [2] | 3 | 1 |
| Q.5(b) | Discuss the responsibilities of the manufacturer, producer, refurbisher, and recycler as mentioned in E-Waste (Management) Rules, 2022. | [3] | 3 | 1 |

**::::::24/02/2023::::::M**