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PRESIDENCY UNIVERSITY BENGALURU

 SET A

 SCHOOL OF ENGINEERING

**END TERM EXAMINATION - MAY 2024**

**Semester :** Semester VI - B.Tech

**Course Code :** CIV2031

**Course Name :** Urban Waste Management

**Program :** B.Tech. Civil Engineering

**Date :** Jun 21, 2024

 **Time :** 01.00pm to 04.00pm

**Max Marks** : 100

**Weightage :** 50%

# Instructions:

1. *Read all questions carefully and answer accordingly.*
2. *Question paper consists of 3 parts.*
3. *Scientific and non-programmable calculator are permitted.*
4. *Do not write any information on the question paper other than Roll Number.*

**PART A**

**Answer any ten questions 10X2 = 20**

1. List the categories of household wastes.
2. Define municipal and hazardous waste.
3. Define anaerobic composting
4. What are mesophilic and thermophilic biological processes of composting?
5. Define composting.
6. Name any four essential components of landfill.
7. What is sanitary landfill? Where it was introduced first time?

(CO1) [Knowledge] (CO1) [Knowledge] (CO2) [Knowledge] (CO2) [Knowledge] (CO2) [Knowledge] (CO2) [Knowledge] (CO2) [Knowledge]

1. Which are the waste streams of Municipal Solid Waste (MSW) will be taken for landfilling?

(CO2) [Knowledge]

1. What is soiled waste? Name any one treatment or disposal option.

 (CO3) [Knowledge]

1. Name the two labels/symbols using in storage containers and transportation vehicles for safe handling of biomedical waste.
2. What is incineration ash? Name any one treatment or disposal option.

(CO3) [Knowledge]

 (CO3) [Knowledge]

1. Which are the two methods found to be interesting for proper treatment of e-waste?

(CO3) [Knowledge]

1. Name the top three mobile using countries in the world, contributing to e-waste generation.

(CO3) [Knowledge]

1. Name any four e-wastes generating in our daily life.

(CO3) [Knowledge]

**PART B**

**Answer any eight questions 8X5 = 40**

1. A landfill cannot be built in places where the environment may be at risk from their presence. Explain any five disadvantages of Landfill.

(CO2) [Comprehension]

1. Landfill gas (LFG) is a natural byproduct of the decomposition of organic material in landfills. List the factors affecting landfill gas production.

(CO2) [Comprehension]

1. Basically to make aerobic compost, you simply gather organic material put it into a bin or a heap in the garden, aerate it and then add it to your soil, sketch the schematic diagram of process of aerobic composting.

(CO2) [Comprehension]

1. Composting is increasingly considered a good way for recycling the surplus of manure as a stabilised and sanitised end-product for agriculture. Enlist the criteria to be considered in composting organic waste.

(CO2) [Comprehension]

1. There is a mandate laid down by the Government of India for the Bio-Medical Waste (BMW) with regard to its proper management. Write the flow diagram of Bio Medical Waste,Management.

(CO3) [Comprehension]

1. The various parts/ materials/composition of e-waste may be divided broadly into six categories. Explain categories of e-waste composition.

(CO3) [Comprehension]

1. The landfilling, acid bath, incineration, recycling, and reuse represent a range of e-waste management and disposal methods. Explain the acid bath process in treating e-waste.

(CO3) [Comprehension]

1. A record 62 million tonnes of e-waste was produced in 2022, up 82% from 2010. Name the top five countries of e-waste generation with quqntity in million tonnes.

(CO3) [Comprehension]

1. The first rule on municipal solid waste came in exist in 2000 as municipal solid waste rules-2010 but currently we are following 2016 municipal solid waste rules. Explain the major amendments done for MSW rule-2000.

(CO1) [Comprehension]

1. The per capita waste generation in Indian cities ranges from 200 grams to 600 grams per day. Write a short note on statistics related to solid waste generation in Indian cities.

(CO1) [Comprehension]

1. Vermicomposting is a process that relies on earthworms and microorganisms to help stabilize active organic materials and convert them to a valuable soil amendment and source of plant nutrients. Write the chart of nutrient profile of vermicompost.

(CO2) [Comprehension]

1. As reported by State Boards, about 619 tons/day of biomedical waste was generating in India. Enlist the classes of biomedical wastes.

(CO2) [Comprehension]

**PART C**

**Answer any four questions 4X10=40**

1. There are various aerobic and anaerobic compost preparation method are in practice. Identify the method of compost preparation developed by L.N Acharya and demonstrate the composting of waste process of it with its advantages.

(CO2) [Application]

1. Determine the landfill area required for a municipality with a population of 50000given that
	1. solid waste generation = 350gm/person/day
	2. compacted density of solid waste= 504kg/m3 iii)average depth of compacted solid waste = 3m

(CO2) [Application]

1. The safe and sustainable management of biomedical waste (BMW) is social and legal responsibility of all people supporting and financing health-care. Discuss the categories of BMW as per World Health Organization (WHO).

(CO3) [Application]

1. One day, you and your friends decide to replace your old cell phones with the new iPhone 11. Like most people, you throw away your old phones and they end up in a landfill. Illustrate the bioaccumulation and biomanification of harm full toxins in trophic levels of ecosystem.

(CO3) [Application]

1. Landfill design must include methods for the recovery and treatment of the leachate produced by the decomposing refuse, and the venting or use of the landfill gas. Articulate the landfill design and operation for different phases of landfill cycle.

(CO2) [Application]

1. E-waste contains multiple known and suspected neurotoxicants, including lead and mercury like toxic heavy metals. Demonstrate the health effects of the e-waste constituents.

(CO3) [Application]