Reg. No. : | | | | | | | | | | |

Question Paper Code: 49117

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

Elective

Civil Engineering

14UCE917 – MUNICIPAL SOLID WASTE MANAGEMENT

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 1 = 10 Marks)

1. _____are those defined as wastes of industrial, institutional or consumer origin that are potentially dangerous either immediately or over a period of time to human beings and the environment.

   (a) Biodegradable wastes (b) Non-biodegradable wastes

   (c) Hazardous wastes (d) Residential waste

2. _____encompasses activities in which materials are identified as no longer being of Value and are either thrown away or gathered together for disposal.

   (a) Solid waste management (b) Waste generation

   (c) Waste storage (d) Waste processing

3. _____refers to the activities associated with the handling of solid wastes until they Are placed in the containers used for their storage before collection.

   (a) On-site handling (b) On-site storage

   (c) On-site collection (d) None of the above

4. The approximate time taken for the paper to degrade is

   (a) 5 to 7 days (b) One year (c) Ten years (d) 5 to 30 days

5. The collection systems in which the containers used for the storage of wastes remain at the point of waste generation except when moved for collection is known as

(a) Hauled- container system (b) Stationary container system

(c) Hauled- container systems (d) All the above

6. Communal collection of solid waste in rural areas is generally done by -------

(a) Community Rollers (b) Tipping buckets (c) Animal carts (d) Bins

7. All means of reducing the amounts of waste that must be collected and disposed of by solid waste authorities is known as

(a) Waste reduction (b) Source reduction (c) Waste recovery (d) Recycling

8. _____involves conversion of waste into gaseous, liquid and solid conversion products with concurrent or subsequent release of heat energy.

(a) Hydrolysis processes (b) Thermal treatment

(c) Chemical treatment (d) Biological treatment

9. _____are useful machines for the volume reduction of bulky waste such as reams of paper, paper materials, bumpers, tires, refrigerators and the shredding of different materials such as scrap iron, aluminum, copper, plastic as well as municipal solid waste and industrial waste.

(a) Grinders (b) Shredders (c) Trammels (d) Wet pulping

10. _____refers to compacted clay or shale, bitumen or soil sealants, etc., and are generally less permeable, resistant to chemical attack and have good sorption properties.

(a) Natural liners (b) Synthetic liners

(c) Geo-membrane (d) Geotextiles

PART - B (5 x 2 = 10 Marks)

11. List out biodegradable and non-biodegradable wastes.
12. Enumerate the biological properties of solid waste.
13. What is meant by transfer station?
14. What is meant by Bio-methanation?
15. Differentiate between the open dumping and sanitary landfill

PART - C (5 x 16 = 80 Marks)

16. (a) Explain the methodologies for characterization of Municipal Solid Waste. (16)

Or

(b) (i) Explain the Goals and Principles of Municipal Solid Waste Management. (8)

(ii) Explain the role of NGO's in Municipal Solid Waste Management. (8)

17. (a) Explain in detail about 3R principle (16)

Or

(b) (i) Describe about the shredding process. (6)

(ii) Explain about the waste processing techniques (10)

18. (a) Explain the constraints involved in collection and transfer of Solid waste. (16)

Or

(b) Write about street cleaning and the tools used for street cleaning (16)

19. (a) Explain in detail about Energy Recovery from MSW. Also list out the parameters affecting it. (16)

Or

(b) Write short notes on

(i) Incineration. (4)

(ii) Vacuum pyrolysis. (4)

(iii) Composting. (4)

(iv) Landfilling. (4)

20. (a) (i) Describe the Disposal methods. (8)

(ii) Describe about the Site construction requirements for landfill. (8)

Or

(b) Write in detail about the different methods of rehabilitating dump sites? (16)