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 **Reg. No. :**

**Question Paper Code: 49014**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

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. \_\_\_\_\_\_\_\_\_loaders generally service commercial and industrial businesses using large waste

 containers with plastic lids or wheely bins being the smaller household version.

 (a) Rear loaders(b) Automated Side loaders

 (c) Front loaders (d) Grapple trucks

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. What is solid waste management?

12. Enumerate the biological properties of solid waste.

13. What is meant by transfer station?

14. What is the significance of recycling?

15. What is biomedical waste?

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) (i) Explain the process of Waste Handling, Sorting, Storage, and Segregation at the

 source. (8)

 (ii) Explain the methods of Waste minimization. (8)

Or

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

 (ii) Explain the On-site storage of Municipal Solid Waste. (10)

18. (a) Explain in detail about the Municipal solid waste collection Schemes. (16)

Or

 (b) (i) Explain the collection routing and scheduling. (8)

 (ii) Describe about the hauled container system. (8)

19. (a) (i) Describe the Key concepts in municipal waste reduction. (6)

 (ii) Explain the Resource recovery through material sorting or separation. (10)

 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) (i) What are the Environmental impacts due to leachate? (8)

 (ii) What are the Specifications for Landfill Sites? (8)