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

Question Paper Code: 49117

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

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. Two biodegradable components of MSW are -------
   (a) Garden & wood wastes (b) Leather & tin cans
   (c) Food & garden wastes (d) Glass & tins

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. Recycling, composting, and source reduction are designed to ------- the amount of waste entering
landfills.
(a) Measure (b) Report (c) Analyze (d) Decrease

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 meant by Bio-methanation?

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) Summarize the characteristics of solid waste. (16)

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 about the waste processing techniques (10)

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

Or

(b) (i) Explain the collection routing and scheduling. (16)

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) Specify in brief about the parameters to be considered while choosing a landfill site.(16)