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Question Paper Code : 21231

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Seventh Semester

Civil Engineering

CE 2039/10111 CEE 36 — MUNICIPAL SOLID WASTE AND MANAGEMENT

(Regulations 2008/2010)

(Common to PTCE 2039– Municipal Solid Waste and Management for B.E. (Part-Time) Sixth Semester – Civil Engineering – Regulations 2009)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Glass pieces and paper wastes come under which categories of municipal solid waste (MSW)?

2. Enunciate the vital principle of municipal solid waste management (MSWM).

3. What do you mean by on-site storage of MSW?

4. Why material characteristics are very essential in storage of MSW?

5. Substantiate the significance of optimal collection route.

6. Specify the normal range of tonnage/day capacity of a typical large transfer station.

7. Differentiate between aerobic and anaerobic composting of MSW.

8. Enlist the probable composition of gases in the pyrolysis of MSW.

9. State the two prime health effects of dumping MSW on land.

10. What is a leachate?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Enlist at least ten features that affect the generation of MSW. Also, briefly discuss about any three of them. (6 + 6)

(ii) Discuss the role of NGOs in effectively helping the governance of MSW. (4)

Or

(b) (i) Mention the various essential physico-chemical biological, arid biochemical characteristics of MSW. Also, briefly explain the significance of proximate analysis of MSW. (9 + 3)

(ii) Explain the various components of MSW. (4)

12. (a) (i) Appropriately delineate the objectives, methods, and merits-cum-demerits of on-site segregation of MSW. (3 × 4)

(ii) Give an account of economics of storage of MSW. (4)

Or

(b) (i) Appropriately substantiate the utility of synthetic polymers in on-site storage of MSW. (4)

(ii) As per Indian conditions, discuss the three popular methods of on-site storage of MSW. (4 × 3)

13. (a) Discuss the points to be considered in selecting any transfer station. Also, appropriately explain its operation with a neat sketch. (4 + 4 + 8)

Or

(b) (i) Considering a small Indian town of 1000 population, discuss the inventories of equipment(s), vehicles, and manpower requirements for the collection of MSW. (4 × 3)

(ii) Explain the procedure of assessing the collection route. (4)

14. (a) (i) Appropriately discuss the significance, factors to be considered in selecting aerobic or anaerobic-based and economics of composting of MSW. (3 + 6 + 3)

(ii) Substantiate how 'incineration process' of MSW is effective in disposal of MSW. (4)

Or

(b) In view of essential aspects, appropriately discuss on:

(i) incineration and

(ii) pyrolysis processes (8 + 8)

15. (a) (i) Appropriately compare and contrast the sanitary and in sanitary land filling methods of disposing of MSW. (3 + 8)

(ii) Explain the biochemistry of landfill leachate. (5)

Or

(b) Highlight the main factors to be considered in selecting a suitable location for sanitary landfill. Also, appropriately discuss the design and operation of a large such sanitary landfill. (6 + 6 + 4)
