

Exam Date & Time: 15-Jul-2022 (09:00 AM - 12:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

VI SEMESTER B.TECH END SEMESTER (MAKE UP) EXAMINATIONS, JULY 2022  
**SOLID AND HAZARDOUS WASTE MANAGEMENT [CHE 4058]**

**Marks: 50**

**Duration: 180 mins.**

**A**

**Answer all the questions.**

Instructions to Candidates: Answer ALL questions Missing data may be suitably assumed

- 1) Discuss about the functional elements of solid waste management. (5)
  - A)
  - B) Write a short note on macro and micro routing. (2)
  - C) Classify the following wastes based on its type and source: (3)
    - (i) Boiler house cinders (ii) Coarse screening grit (iii) Pathological wastes
- 2) Discuss about the different phases in the landfill gas production with schematics of variation in gas composition. (4)
  - A)
  - B) Discuss about the different methods of landfilling. (4)
  - C) Write a shot note on the composition of leachate and mention different treatment methods available for the treatment of leachate. (2)
- 3) Discuss about the recycling of paper with a schematic diagram. (3)
  - A)
  - B) Write a short note on MURF and full stream processing. Also discuss about their advantages and disadvantages. (4)
  - C) Explain the working of hydropulper with a neat sketch. (3)
- 4) Discuss about windrow composting. (4)

- A)
- B) Write a short note on steps involved in the anaerobic digestion for biogasification. (3)
- C) Discuss about the biological processes involved in composting. (3)
- 5) Explain about the mass burn incineration technology with a neat sketch. (5)
- A)
- B) Write a short note on precautionary labelling for transportation of hazardous wastes. Also, make a precautionary labelling for the transportation of sulfuric acid. (3)
- C) Discuss about any four characteristics of hazardous wastes. (2)

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