

B.E. Civil VII CBGS  
Elective I - Solid Waste Mgt  
(3 Hours)

17.12.15  
QP Code : 6043

Max Marks: 80

- N.B. 1. Question No.1 is compulsory  
2. Attempt any three questions from remaining five questions.  
3. Assume any suitable data wherever necessary.

Q.1 Attempt any four

- What is the importance of 3R principal in solid waste management?
- Explain proximate and ultimate analysis.
- What is the effect of solid waste on soil, air and water?
- Write a note on material recovery facility.
- How waste minimization is done in Industrial solid waste?

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- Q.2 a. What are the different factors that must be considered in the design of transfer station? Explain storage load transfer station with neat sketch.  
b. Explain Hauled container system and stationary container system with neat sketch.

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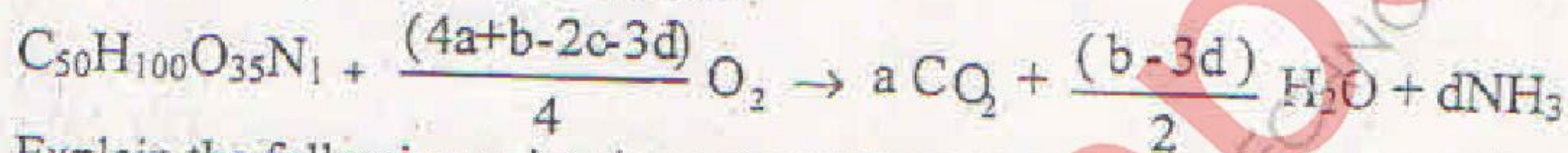
- Q.3 a. What is Leachate? How it is formed? How its movement is controlled?  
b. Explain EPA identification of toxic and hazardous wastes. What are the characteristics of hazardous wastes?

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- Q.4 a. Calculate the amount of oxygen required to stabilize one tonne of solid waste having chemical composition  $C_{50}H_{110}O_{40}N_1$

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- b. Explain the following points in context of hospital solid wastes.  
1) Categories of wastes  
2) Treatment and disposal

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- Q.5 a. What is engineered landfill? Why it is essential? Explain in brief different methods of landfilling.

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- b. Estimate the energy content of solid waste (on dry basis and ash free dry basis) with the following composition is given in a table below.

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| Components       | % by mass | Energy KJ/Kg |
|------------------|-----------|--------------|
| Food waste       | 35        | 4650         |
| Paper            | 25        | 16750        |
| Cardboard        | 5         | 16300        |
| Plastics         | 15        | 32600        |
| Garden Trimmings | 5         | 6500         |
| Wood             | 10        | 18600        |
| Tin Cans         | 5         | 700          |

Q.6 Write short note on any four

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- Electronic waste
- Idore method of composting
- Multichamber Incinerator
- Sampling of solid waste
- Legal aspects of solid waste disposal