



**Sample Question Paper for Solid Waste management**

**Q1. Solve all questions mandatory**

**02 marks each**

Q1. a Why is it difficult to recycle plastics

- I. It is very hard
- II. It comes in different sizes
- III. It is adhesive
- IV. It contains different types of polymer resins

Q1. b The aerobic composting used in India is

- I. Bangalore Method
- II. Nagpur Method
- III. Mangalore Method
- IV. Indore Method

Q1. c The anaerobic composting used in India is

- I. Bangalore Method
- II. Nagpur Method
- III. Mangalore Method
- IV. Indore Method

Q1. d The method of refuse disposal involving burial in trench is called

- I. Incineration
- II. Landfilling
- III. Composting
- IV. Pulverization

Q1. e Sanitary Landfill may cause trouble during

- I. Peak Monsoon Season
- II. Peak Summer Season
- III. Peak Winter Season
- IV. Both Peak Winter Season and Peak Summer Season

Q1. f Leachate is coloured liquid which is coming out from

- I. Septic Tank
- II. Aerated Lagoon
- III. Sanitary Landfill
- IV. Compost Plant

Q1. g Which one of the following methods can be employed for plastic and rubber waste

- I. Composting
- II. Incineration
- III. Pyrolysis
- IV. Sanitary Landfill

Q1. h Which gas produce in open dump from decomposition of biodegradable waste

- I. Ethane
- II. Methane
- III. Propane
- IV. Ethylene

Q1. i Following statement is not true for plastic waste

- I. Produces toxic fumes when burnt
- II. Can be used to make compost
- III. It lasts long
- IV. All of the above

Q1. j Which of the following can be recycled many times?

- I. Wood
- II. Plastic
- III. Aluminium
- IV. Organic materials

Q1. k The burning of the wastes is not an acceptable practice of solid waste management because

- I. It is very costly
- II. It requires a lot of space
- III. It requires modern technologies
- IV. It causes several environmental issues

Q1. l Which of the following element/s is/are cause of e-waste?

- I. Lead
- II. Wood
- III. Plastic
- IV. Aluminium

Q1. m Which of the following are the main contributors of the e-waste in the world?

- I. Refrigerators/freezers, washing machines, dishwashers
  - II. Small household appliances (toasters, coffee makers, irons, hairdryers)
  - III. Personal computers, telephones, mobile phones, laptops, printers, scanners, photocopiers
  - IV. Gas cylinder, chimneys & home appliances
- I. Only I, II, III
  - II. Only I & II
  - III. Only I, III, IV
  - IV. Only IV

- Q1. n How are electronic items dangerous?
- I. They degrade over time, releasing cancer-causing chemicals into the air.
  - II. Lead and mercury in components can cause metabolic changes in users.
  - III. They leach toxic metals in landfills and into ground water.
  - IV. They create electromagnetic fields that interfere with animal reproduction.

Q1. o Which toxic compound is not found in e-waste?

- I. Mercury
- II. Cadmium
- III. Neon
- IV. Lead

Q1. p What is the hazardous pollutant released from LED's

- I. Arsenic
- II. Barium
- III. Cobalt
- IV. Cadmium

Q1. q In vermi composting method

- I. Earthworm is added to compost
- II. Bacteria is added to compost
- III. Fungus is added to compost
- IV. None of the above

Q1. r Gasification is the extension of pyrolysis, it can be

- I. Exothermic Only
- II. Endothermic Only
- III. Both Exothermic and Endothermic
- IV. None of the above

Q1. s Which one of the following statements explain the term pyrolysis

- I. Solid waste is heated in closed containers in oxygen-free atmosphere
- II. Solid waste is incinerated in presence of oxygen
- III. Wastewater is treated with oxygen
- IV. Dissolved solids from water are removed by glass distillation

Q1. t What is the advantage of waste to energy

- I. It is economical
- II. Reduce volume of waste
- III. Recover useful energy
- IV. Both B & C

**Q2 Solve any four**

**05 marks each**

Q2.a What are the different characteristics of hazardous waste?

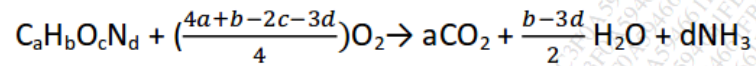
Q2.b What is called as optimization of collection route?

- Q2.c What is the effect of solid waste on soil, air and water?
- Q2.d Write a note on material recovery
- Q2.e Explain the functional elements of municipal solid waste management.

**Q3 Solve any two**

**10 marks each**

- Q3.a List the Engineering consideration involved in the implementation of 'Material Recovery Facilities'. Give the flow diagram for material recovery facilities for processing yard and other green wastes.
- Q3.b Determine the amount of air required to oxidize one tonne of waste with the chemical composition  $C_{50}H_{100}O_{40}N_1$ .



- Q3.c 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.

Components	% by Weight	Energy (KJ/Kg)
Foodwaste	35	4650
Paper	5	16750
Cardboard	15	16300
Plastic	13	32600
Garden Trimming	25	6500
Wood	2	18600
Tin Cans	15	700