



11819

17605

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) *All questions are **compulsory**.*
 - (2) *Answer **each** next main question on a **new** page.*
 - (3) *Illustrate your answers with **neat** sketches **wherever** necessary.*
 - (4) *Figures to the **right** indicate **full** marks.*
 - (5) *Mobile Phone, Pager and any other Electronic Communication devices are **not permissible** in Examination Hall.*

Marks

1. Attempt **any five** of the following : **20**
- a) State types of solid waste and give examples of each.
 - b) Explain impact of solid waste on environment.
 - c) Explain the methods of collection of municipal solid waste.
 - d) State the typical constituents of municipal landfill gas.
 - e) Define :
 - i) Pyrolysis
 - ii) Leachate
 - f) State the schedule - II of bio-medical waste (Management and Handling) Rules 1998.
 - g) State the status of recycling of solid waste in India.
2. Attempt **any four** of the following : **16**
- a) Explain any one leachate control system with a neat sketch.
 - b) State advantages and disadvantages of incineration process.
 - c) State types of incinerators and explain any one.
 - d) State sources of bio-medical waste and give average BMW generation rate.
 - e) State benefits of recycling of E-waste.
 - f) Define : i) Biomedical waste ii) E-waste
3. Attempt **any four** of the following : **16**
- a) Explain chemical characteristics of solid waste.
 - b) Enlist sources of solid waste.
 - c) Explain solid waste management techniques hierarchy.
 - d) Explain importance of solid waste management in making any city as smart city.
 - e) Explain ideal transportation system for municipal solid waste.
 - f) Draw the organisation pattern of solid waste management.

P.T.O.



4. Attempt **any four** of the following :

- a) State requirements of location of transfer station.
- b) Draw a neat labelled sketch of Litter Bin.
- c) State the parameters to be taken into account while making storage facility for solid waste.
- d) Describe factors affecting composting process.
- e) State any four advantages and disadvantages of landfill method.
- f) Differentiate in between Bangalore method and Indore Method of composting.

5. Attempt **any four** of the following :

16

- a) Explain Vermicomposting.
- b) Explain collection and disposal of industrial waste.
- c) State bio medical waste management technologies and explain any one.
- d) State hazardous substances in E-waste and its health effects on health and environment.
- e) Explain disposal of E-waste.
- f) Explain the recycling of industrial waste.

6. Attempt **any four** of the following :

16

- a) Explain health problems during segregation and recycling of solid waste.
 - b) State the importance of public involvement and participation in solid waste management.
 - c) State Do's and Don'ts to avoid health problem during solid waste management.
 - d) Explain process of public involvement and participation in solid waste management.
 - e) State methods of collection of recyclables and explain any one.
 - f) State purpose of recycling of solid waste.
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