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11718

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) *Assume suitable data, **if necessary**.*
 - (6) *Mobile Phone, Pager and **any other** Electronic Communication devices are **not permissible** in Examination Hall.*

Marks

1. A) Attempt **any three** of the following :

12

- a) Define air pollution and enlist any four man-made sources of air pollution.
- b) Define the terms :
 - i) BOD and
 - ii) COD.
- c) Name the methods used for pollution control in pulp and paper industry.
- d) Give classification of biomedical waste.

B) Attempt **any one** of the following :

6

- a) Explain working of electrostatic precipitator with a neat diagram.
- b) List out any two methods of solid waste collection and explain sanitary landfill method of solid waste processing.

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

16

- a) State any four air quality standards specified by CPCB.
- b) State the functions of pollution control board.
- c) Distinguish between primary and secondary waste water treatment methods (any two points).
- d) Explain any two methods for disposal of biomedical waste.
- e) State business benefits of ISO 14000 (any four).

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3. Attempt **any four** of the following : 16
- a) Classify air pollutants and give one example of each class.
 - b) Give any two effects of sulfur dioxide and carbon monoxide on human health.
 - c) List out any four types of water pollutants with example of each.
 - d) List sampling techniques employed for particulates air pollutants and explain any one in detail.
 - e) Explain any one method used for waste water sampling.
 - f) Draw a neat labeled diagram of trickling filter.
4. A) Attempt **any three** of the following : 12
- a) Illustrate the importance of dewatering of sludge in sludge management.
 - b) List out physical and chemical characteristics of waste water, four each.
 - c) State any four effect of particulate air pollutant on materials.
 - d) State the necessity of environment audit for chemical industry.
- B) Attempt **any one** of the following : 6
- a) Explain treatment of solid, liquid and gaseous effluent produced in urea plant.
 - b) Write the procedure for environment audit.
5. Attempt **any four** of the following : 16
- a) Write any two advantages and disadvantages each of electrostatic precipitator.
 - b) Explain incineration process for solid waste disposal.
 - c) With a neat diagram explain activated sludge treatment.
 - d) Give any eight reasons for implementing ISO 14001.
 - e) Explain preliminary treatment methods used for effluent (waste water) treatment.
 - f) Give advantages and disadvantages of grab sampling and composite sampling methods of waste water.
6. Attempt **any four** of the following : 16
- a) Write any four application of wet scrubber and electrostatic precipitator.
 - b) Explain with a neat diagram working of fabric filter.
 - c) State any four drinking water quality standards specified by WHO.
 - d) State the necessity of recovery of chemicals from black liquor.
 - e) State importance of DO, TSS, TDS and pH in waste water treatment.
 - f) Explain 3R principle for solid waste management.
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