

17646

**11920**

**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 : 12
- (a) List different air pollution controlling methods. Draw neat sketch of fixed bed adsorber.
  - (b) Enlist different types of water pollutants with their sources.
  - (c) List different pollutants produced in Urea plant.
  - (d) Explain disposal of biomedical waste.
- (B) Attempt any ONE : 06
- (a) Explain thermal and catalytic incinerator. Compare it with any two points.
  - (b) Explain in detail “3R” Principle.
2. Attempt any FOUR : 16
- (a) Write working principle and draw neat sketch of Electrostatic precipitator.
  - (b) Define BOD and COD. State their significance.
  - (c) Draw neat labelled sketch of Trickling filter.
  - (d) List the characteristics that can make a waste hazardous.
  - (e) State the importance of environmental audit in industry.

- 3. Attempt any FOUR :** **16**
- (a) Describe grab sampling and freeze out sampling method.
  - (b) Draw and explain Gravity Settling Chamber.
  - (c) State the role of Pollution Control Board.
  - (d) Explain preliminary treatment method for waste water treatment.
  - (e) List different drinking Water Quality Standard of WHO.
  - (f) State the importance of secondary (Biological) treatment for waste water.
- 4. (A) Attempt any THREE :** **12**
- (a) Draw neat labelled sketch of Activated sludge treatment plant.
  - (b) Enlist types of water pollutants with their effects.
  - (c) Describe effect of air pollution on human health and material.
  - (d) Discuss business benefit of ISO-14000.
- (B) Attempt any ONE :** **06**
- (a) State characteristics of liquid effluent from paper pulp (Kraft) industry.  
Explain importance of chemical recovery from black liquor.
  - (b) Explain procedure of environmental audit in industry.
- 5. Attempt any FOUR :** **16**
- (a) Describe construction & working of venturi scrubber.
  - (b) Explain sanitary landfill method for solid disposal.
  - (c) Explain chemical and biological characteristics of waste water. (four each).
  - (d) Describe procedure of Environmental audit.
  - (e) Explain Grab sampling and Composite sampling.
  - (f) Illustrate following w.r. to sludge treatment :
    - (i) Sludge Thickening
    - (ii) Sludge Dewatering

**6. Attempt any FOUR :****16**

- (a) Draw neat labelled sketch of High volume sampler & explain its working.
  - (b) Describe principle & construction of Cyclone Separator.
  - (c) Explain (i) Dissolved Oxygen (ii) Total Dissolved Solid
  - (d) Explain treatment method for pollutants produced in urea plant.
  - (e) Explain working of trickling filter.
  - (f) Explain different collection methods for solid waste.
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