

17646

15162

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.

Marks

1. (A) Attempt any **THREE** of the following : **12**
- (a) Define air-pollution. Classify the pollutants with two examples of each.
 - (b) List out any four types of water pollutants. Explain any one of them.
 - (c) List out pollutants produced from urea plant.
 - (d) State any four characteristics of solid waste.
- (B) Attempt any **ONE** of the following : **6**
- (a) Explain procedure of sampling of air-pollutant by high volume sampler with neat sketch.
 - (b) Describe methods for solid waste collection in detail. (Curb method and Alley method)
2. Attempt any **FOUR** of the following : **16**
- (a) Describe catalytic incinerator with neat labelled diagram.
 - (b) Explain working of activated sludge treatment plant.
 - (c) Define BOD and COD. State their significance.
 - (d) Explain 3R principle for solid waste management.
 - (e) Explain the need of ISO-14001.

- 3. Attempt any FOUR of the following : 16**
- (a) Explain Grab sampling method for gaseous pollutant.
 - (b) State any four effect of air-pollution on human health.
 - (c) State any four physical and chemical characteristics of waste water.
 - (d) Explain working of cyclone separator with diagram.
 - (e) State the role of Maharashtra Pollution Control Board (MPCB).
 - (f) Name the methods used for waste water sampling ? Explain any one with example.
- 4. (A) Attempt any THREE of the following : 12**
- (a) Explain any one method of sludge dewatering with neat sketch.
 - (b) Name the preliminary treatment methods for waste water and explain any one.
 - (c) Explain the working of venturi scrubber with neat diagram.
 - (d) State the necessity of environmental Audit for any chemical plant.
- (B) Attempt any ONE of the following : 6**
- (a) State the necessity of recovery of chemicals from black liquor in pulp and paper industry. Explain in details.
 - (b) Explain principle, objective and components of Environmental Management.
- 5. Attempt any FOUR of the following : 16**
- (a) Explain the working of electrostatic precipitator with diagram.
 - (b) Name the sources of biomedical waste and list its treatment method.
 - (c) State the principle of trickling filter and explain its working.
 - (d) Explain the business benefits of ISO-14000.
 - (e) Describe two-stage sludge digestion process with neat sketch.
 - (f) State any six effect of thermal pollutant. Name any two sources of thermal pollutant.

6. Attempt any FOUR of the following :**16**

- (a) Explain working of gravitational settling chamber as particulate pollution control equipment with diagram.
 - (b) Describe construction of fabric filter with diagram.
 - (c) State the meaning of the term DO and TDS. State its significance.
 - (d) Name the pollutants produced from pulp and paper industry.
 - (e) Explain the role of comminutor in sewage treatment plant.
 - (f) List out the types of solid wastes.
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