

**[Time: 2½ Hours]**

**[ Marks:60]**

Please check whether you have got the right question paper.

- N.B:**
1. **All questions are compulsory.**
  2. **Use of log or nonprogrammable calculator is permitted.**

Q.1 A Attempt any two of the following:

- i) What are the Objective of Common Effluent Treatment Plant (CETP)?
- ii) Discuss the importance of the recycle and reuse of treated water.
- iii) Describe the electrochemical deposition process for the recovery of metals from industrial effluents.
- iv) What are environmental impacts of water pollution due to metallurgical industry?

B Discuss anaerobic digestion process for waste water treatment

OR

B Comment on permissible limits for heavy metals in the metallurgical industrial effluent.

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Q.2 A Attempt any two of the following.

- i) Explain the role of 3 R's in sustainable development.
- ii) What are the effects of solid waste on human health and environment?
- iii) Write note on the management and disposal of municipal solid wastes.
- iv) Discuss the occupational health hazards associated with biomedical waste handling?

B Explain role of the solid waste management in the sustainable development.

OR

B Discuss treatment and disposal of sludge or dry cake

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Q.3 A Attempt any two of the following.

- i) Explain the impact of plastic additives on the human health and environment.
- ii) Discuss the composition and ideal properties of paint
- iii) Explain the application of thermal analytical techniques in polymer analysis.
- iv) What are advantages of the organosilicone based paints?

B Discuss the determination of volatile and non-volatile components of paints.

OR

B List metallic impurities in plastics. Explain any one method available for the determination metallic impurities in plastics.

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Q.4 A Attempt any two of the following.

- i) What is ore dressing ?explain any one physical methods of ore dressing
- ii) Discuss in details: Carating of the gold
- iii) Discuss the application of the Zone refining in the metallurgical industry.
- iv) With respect to the objectives; differentiate the calcinations and roasting.

B What is alloying? Explain its need

OR

B How is Aluminium from bauxite ore analysed?

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Q.5 Attempt any four of the following.

- i) Write short note on quality of potable water.
  - ii) Comment on effluent parameters for metallurgical industry.
  - iii) What are environmental health impacts of biomedical waste?
  - iv) How the non-decomposable solid waste managed?
  - v) Explain the classification of plastics.
  - vi) Discuss the environmental impact of plastics as a pollutant.
  - vii) What are the applications of the high purity materials?
  - viii) Discuss the role of carbon in steel.
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