

*This question paper contains 4 printed pages.*

3053

Your Roll No. ....

**MEC**

**J**

Paper— CE.508

**WATER POLLUTION**

Time : 3 hours

Maximum Marks : 100

*(Write your Roll No. on the top immediately  
on receipt of this question paper.)*

*Attempt any five questions.*

*All questions carry equal marks.*

1. (a) What do you understand by pure water? How is it different from polluted water? Also discuss about origin of water pollutants. 10
- (b) What do you understand by water contamination? Also discuss various sources of water pollutants. 10
2. (a) What are different sources of water? Discuss in brief about the water resources of India. Also discuss the problems associated with water resources of India. 10
- (b) "Water is a unique matter on the earth." Justify the statement. Also discuss the chemical structure and thermal properties of water. 10

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3. (a) What is the importance of standards in water management? How are standards framed? Discuss standards for drinking water and effluent standards. 10
- (b) What are different characteristics of water? Discuss sources, impact and methods of determination in the laboratory of following parameters:
- (i) Total dissolved solids
- (ii) Hardness. 10
4. (a) Discuss the importance of ion balance in water pollution. A water sample is tested for ion balance for which results are shown below. An error of 8% in the balance is acceptable. Comment on test conducted.
- |                                    |  |
|------------------------------------|--|
| $\text{Ca}^{++} = 60 \text{ mg/l}$ | $\text{HCO}_3^{--} = 270 \text{ mg/l}$ |
| $\text{Mg}^{++} = 20 \text{ mg/l}$ | $\text{SO}_4^{--} = 65 \text{ mg/l}$   |
| $\text{Na}^{++} = 95 \text{ mg/l}$ | $\text{Cl}^{--} = 88 \text{ mg/l}$     |
- 10
- (b) How do typical concentrations of major ions in continental rain differ from marine rainfall? Also explain major anion and cation composition of average Himalayan river with the help of neat sketch. 10
5. (a) "Why are major ancient cities located on the bank of some river." Discuss self purification of

- streams. Also discuss the problem of rivers in present scenario. Also discuss in brief about Yamuna Action Plan. 10
- (b) Discuss various zones which are formed when a drain falls in river. Also discuss "Dissolved Oxygen Model". 10
6. (a) If sea water for a salinity of 35,000 was found, name few minor dissolved components at concentration  $1000 \mu\text{g}/\text{kg}$ . Also draw a triangle and mark the corners as
- (i)  $\text{HCO}_3$
- (ii) Si
- (iii)  $\text{Cl} + \text{SO}_4$
- and show where a given sample of ground water from a basaltic near Nagpur falls. 10
- (b) How does contamination of ground water take place? Discuss the severity of ground water contamination. How does it differ from surface water pollution? Also discuss mechanism involved in ground water contamination. 10
7. Write short notes on any four:
- (i) Eutrophication
- (ii) Degradation of organic matter

- (iii) Pesticide kinetics in the environment
- (iv) Heavy metal pollution of water bodies
- (v) Oil pollution and its control
- (vi) Thermal pollution
- (vii) Water quality modelling.

5×4