



# CHEMISTRY

## JEE (MAIN AND ADVANCED)

# CHEMISTRY

## ENVIRONMENTAL CHEMISTRY

### Problems

1. Dissolved oxygen values of four water samples A,B,C and D are respectively 6 ppm, 5

ppm, 1 ppm and 3 ppm. Which is polluted?



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2. Biochemical oxygen demand values of four water samples P, Q, R and S are respectively 100 ppm, 50 ppm, 150 ppm and 10 ppm. Arrange them in the descending order of their purity.



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3. Threshold limit value of three pollutants X, Y and Z are respectively 9 ppm, 20 ppm and 5 ppm. Which one is the most toxic ?



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4. The COD value of a water sample is 40 ppm. Calculate the amount of acidified  $K_2Cr_2O_7$  required to oxidise the organic matter present in 500 ml of that water sample.



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5. DO value of a water sample is 6 ppm. Calculate the weight of dissolved oxygen present in 100 kg of water sample.



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6. 100 ml of a sample of water requires 1.96 mg of potassium dichromate in the presence of 50%  $H_2SO_4$  for the oxidation of dissolved organic matter in it. Calculate the chemical oxygen demand.



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7. How are oxides of nitrogen harmful to ozone concentration?



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8. Ozone is harmful in the environment  
segment 'x' but it is useful in the environment  
segment 'y'. What are x and y?



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**9.** Freons are boon to industry, but curse to environment. Justify.



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**10.** Calculate the oxygen requirement for the removal of organic pollutants.



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**11.** How does sulphide and carbonates present in water toxic ?



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**12.** Bleaching of paper with hydrogen peroxide is preferred now-a-days Why?



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1. Define the following terms and give two examples each.

a) Pollutant b) Contaminant

c) Sink d) Receptor and

e) Speciation



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2. Write about the environmental segments.



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3. What is meant by dissolved oxygen ? Write its optimum value.



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4. What are DO, COD and BOD ?



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5. How is TLV useful to determine pollution?



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6. Write the important reasons for pollution.



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## Exercise 5 1 2

1. What are air pollutants? How are they causing air pollution?



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2. How do the substances  $\text{CO}$ ,  $\text{NO}$ ,  $\text{SO}_2$  and CFCs pollute atmosphere .



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3. How is global warming taking place? What are its effects? Suggest the ways to prevent it.



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4. How do acid rains occur? What are the effects of acid rains?



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5. Ozone is a pollutant and protector to the environment.. Discuss.



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6. How can you prevent green house effect by growing plants?



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7. In which segment of atmosphere, ozone is present? What is the advantage of ozone layer?



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**8.** What is acid rain? How is it formed?



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**9.** What is photochemical smog? What are its consequences?



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**Exercise 5 1 3**

1. What happens when water is polluted ?

Name the diseases caused by water pollution.



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2. What is bioamplification ?



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3. What is eutrophication?



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4. How is water polluted ?



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5. Discuss the pollution due to industrial wastes.



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6. What happens if fluorides are present in water?



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7. Discuss on the development of green chemistry.



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8. What do you understand with ecofriendly drycleaning ?



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9. Green Chemistry is to avoid environmental pollution. Explain.



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**Questions For Descriptive Answers**

1. TLV values of four pollutants A, B, C and D are 2 ppm, 9 ppm, 20 ppm and 50 ppm. Among these four pollutants which one is the most toxic pollutant ? Why?



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2. COD of a water sample is 8ppm the weight of acidified  $K_2Cr_2O_7$  required to oxidise the organic matter present in one litre of water sample is



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3. Freons are boon to industry, but curse to environment. Justify.



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4. Over nutritions condition leads to eutrophication. Explain ?



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5. What is the advantage of using  $H_2O_2$  over using  $Cl_2$  in laundry ?



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6. What are the photochemical reactions those occur in stratosphere?



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7. 100 ml of sample of water requires 3.92 mg of  $K_2Cr_2O_3$  in presence of  $H_2SO_4$  for the oxidation of dissolved organic matter present in it. The COD of the water sample in ppm



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8. A sample of pond water contains 40mg of organic matter requires 32mg of dissolved oxygen. If pond water contains 100mg of

organic matter per two litres, BOD value of the water sample is.



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