

This question paper contains 7 printed pages]

Your Roll No.....

907

B.Sc.(Hons.)/I C
CHEMISTRY - Paper VI (b)
(Environmental Chemistry)

Time : 3 Hours

Maximum Marks : 55

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

Attempt six questions in all.

Q. No. 1 is compulsory. Attempt two questions each from
Section A and B and one question from Section C.

Use of calculator is allowed.

1. (a) Fill in the blanks : 1×10
- (i) The region above the stratosphere, in the altitude range of 50 km to 85 km, is called.....
- (ii) Aerosols of natural origin having diameters < 0.2 μ are called.....

P.T.O.

- (iii) Apart from the ionic species, the atmosphere also consists of highly reactive....., generated by
- (iv) The lapse rate is.....in troposphere and..... in stratosphere.
- (v)is the atmospheric region in which ozone absorbs u.v. radiations and increase the temperature.
- (vi) Running fresh water ecosystems are called
- (vii) An indicator organism used to measure microbial quantity of water is..... .
- (viii) An antidote of As^{3+} poisoning is.....

- (ix) Cl⁻ in water can be determined by.....
- (x) Selenium can be estimated by spectrophotometer method using..... as complexing agent.
- (b) State True or False : 1×5
- (i) Ozone is the important species in the stratosphere acting as a protective radiation shield for living organisms on earth.
- (ii) Radiation inversions occur in the night at the surface of the earth.
- (iii) The determination of chemical oxidants in water is BOD.
- (iv) Study of fresh water ecosystems is Hydrology.
- (v) Alkyl mercury may cause permanent mental retardation.

Section A

2. (a) Define the following terms : 3
- (i) Pollutant
 - (ii) Contaminant
 - (iii) Sink
- (b) Differentiate between the following :
- (i) Primary and secondary pollutants.
 - (ii) Biodegradable and non-biodegradable pollutants.
 - (iii) Troposphere and stratosphere. 3
- (c) What is meant by the lapse rate ? How do you account for the observed lapse in different regions of the atmosphere. 2
3. (a) Discuss the causes and effects of ozone depletion. 3
- (b) Explain what is meant by greenhouse effect. 3

- (c) Write reactions for chemical and photochemical reactions occurring in the atmosphere. 2
4. (a) How do modifications of internal combustion engine help in controlling exhaust gases ? 3
- (b) How are air pollutants transferred from troposphere to earth ? What are their physiological effects on vegetation ? 3
- (c) Discuss the catalytic role of Cl and NO in the ozone depletion. 2

Section B

5. (a) Describe the Hydrologic cycle with illustrations. 3
- (b) What is BOD ? How can it be determined ? 3
- (c) Describe a method of treatment of water containing CrO_4^{2-} and CN^- . 2

6. (a) What are the components of detergents ? How can detergents lather well both in hard and soft water ? 3
- (b) What are the 3 stages of water treatment before it can be led into water bodies ? After what stage, digestion of sludge is carried out ? How is digestion of sludge done ? 3
- (c) Explain the lime soda process of removal of Hardness of water ? 2
7. (a) Explain the harmful effects of oil pollution in water. 3
- (b) Explain the organisms found in Marine Ecosystems. 3
- (c) Explain the harmful effects of thermal pollution in water. 2

Section C

8. (a) Explain the composition quality of Top soil. 3
- (b) Discuss the effects of oil pollution. 3
- (c) Hydrogen is the fuel of future. Justify in detail. 2

9. (a) Distinguish between renewable and non-renewable energy sources giving examples ? 3
- (b) What are the various ways by which geothermal energy is harnessed ? 3
- (c) Name different categories of noise. How can noise pollution be minimized ? 2