

ENVIRONMENTAL SCIENCES
(EVSC 2016)

Time Allotted : 3 hrs

Full Marks : 70

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 5 (five) from Group B to E, taking at least one from each group.*

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) The saturated value of Dissolved Oxygen is approximately
(a) 9 mg/lit (b) 5 mg/lit
(c) 20 mg/lit (d) 6 mg/lit.
- (ii) Which one is not a green house gas?
(a) Water vapour (b) Nitrogen
(c) Carbon dioxide (d) Methane.
- (iii) Value of Earth's ALBEDO is
(a) 0.21 (b) 0.11
(c) 0.31 (d) 0.41.
- (iv) Anaemia can be caused due to the toxic effect of
(a) Hg (b) As
(c) Cd (d) Pb.
- (v) The Environmental Protection Act of India was enacted in the year
(a) 1984 (b) 1982
(c) 1986 (d) 1985.
- (vi) Ozone is a pollutant when present in
(a) troposphere (b) stratosphere
(c) mesosphere (d) ionosphere.
- (vii) Which of the poisonous gas was released during Bhopal Gas Tragedy?
(a) Arsenic pentafluoride (b) Chlorine
(c) Methyl isocyanate (d) Carbon monoxide.
- (viii) Lakes with moderate nutrient status are known as
(a) mesotrophic (b) oligotrophic
(c) eutrophic (d) none of (a), (b) & (c).

- (b) What is dissolved oxygen in water? What are the importances of dissolved oxygen (DO) as water quality parameter? [CO1, LOCQ]
- (c) Describe the two types of Eutrophication in lakes. How can Eutrophication be controlled? [CO1, LOCQ]
- 4 + (1 + 2) + (2 + 3) = 12**

7. (a) Considering biodegradation of organic matter as first order reaction show that $BOD_t = C_0(1 - e^{-kt})$, where terms have their usual meanings. [CO6, IOCQ]
- (b) Describe using suitable diagram how an “Trickling Filter” is used in secondary treatment of waste water. [CO6, HOCQ]
- (c) What do you mean by thermal pollution of water? Write down the effects of thermal pollution of water. [CO5, LOCQ]
- (d) Why hard water cannot be used in laundries and boilers? [CO4, LOCQ]
- 3 + 3 + 4 + 2 = 12**

Group - E

8. (a) Briefly discuss the working principle of modern sanitary landfill mentioning advantages and disadvantages. [CO5, LOCQ]
- (b) How will you convert waste to wealth? [CO5, LOCQ]
- (c) Mention the various steps involved in the technical process for controlling noise pollution. [CO6, LOCQ]
- (2 + 2 + 2) + 3 + 3 = 12**
9. (a) Calculate the intensity of 110dB sounds. (Reference intensity = $1 \times 10^{-12} \text{ w/m}^2$). [CO3, HOCQ]
- (b) Classify traffic noise mentioning the respective scale involved in measuring the noise levels. [CO5, LOCQ]
- (c) Discuss incineration process mentioning advantages and disadvantages. [CO6, LOCQ]
- (d) What are the biomedical wastes? What is the best way to dispose biomedical wastes? [CO5, LOCQ]
- 2 + 3 + 3 + (1 + 3) = 12**

<i>Cognition Level</i>	<i>LOCQ</i>	<i>IOCQ</i>	<i>HOCQ</i>
<i>Percentage distribution</i>	<i>78.12</i>	<i>14.58</i>	<i>7.29</i>

Course Outcome (CO):

After the completion of the course students will be able to

- CO 1. Understand the natural environment and its relationships with human activities.
- CO 2. Characterize and analyze human impacts on the environment.
- CO 3. Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems.

B.TECH/AEIE/CHE/CSBS/CSE/CSE(AI&ML)/ECE/EE/4TH SEM/EVSC 2016/2023

- CO 4. Educate engineers who can work in a multi-disciplinary environment to anticipate and address evolving challenges of the 21st century.
- CO 5. Understand and implement scientific research strategies, including collection, management, evaluation, and interpretation of environmental data.
- CO 6. Design and evaluate strategies, technologies, and methods for sustainable management of environmental systems and for the remediation or restoration of degraded environments.

**LOCQ: Lower Order Cognitive Question; IOCQ: Intermediate Order Cognitive Question; HOCQ: Higher Order Cognitive Question.*