

2012

**BASIC ENVIRONMENTAL ENGINEERING &
ELEMENTARY BIOLOGY**

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

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

GROUP – A

(Multiple Choice Type Question)

1. Choose the correct alternatives for the following: 10 x 1 = 10
 - i) Which one of the following is a renewable source of energy?
 - a) Thermal
 - b) Hydroelectric
 - c) Nuclear
 - d) Solar.
 - ii) Ozone is a pollutant when present in
 - a) stratosphere
 - b) troposphere
 - c) mesosphere
 - d) ionosphere.
 - iii) The unit of intensity level of noise is
 - a) metre
 - b) candela
 - c) newton
 - d) decibel.
 - iv) A greenhouse gas is
 - a) CO
 - b) H₂S
 - c) SO₂
 - d) H₂ O-vap.

- v) Which of the following is an example of *in situ* conservation?
- a) Deer park b) Seed bank
c) Wildlife sanctuary d) Aquarium.
- vi) Which of the following does not cause biodiversity loss?
- a) Habitat destruction
b) Creating safari parks
c) Introduction of new species
d) Trading on living species.
- vii) Montreal Protocol is adopted to reduce
- a) greenhouse gas emission
b) ozone depletion
c) automobile emission
d) deforestation.
- viii) There are two samples of waste water. Sample-I has BOD 300 mg/l and Sample-II has BOD mg/l.
- a) the degree of pollutant is same in both the samples
b) Sample-I is more polluted than Sample-II
c) Sample-II is more polluted than Sample-I
d) no inference can be drawn on the degree of pollution.
- ix) Sulfur cycle is
- a) hydrologic cycle b) gaseous cycle
c) Sedimentary cycle d) none of these.

7. a) What do you understand by environmental degradation? What is aerosol?
- b) Give a view on EIA.
- c) Define food chain. State the principal types of food chains with example.
8. a) What is bio-diversity? Discuss various conservation methods in brief.
- b) Describe various modes of downstream self-purification of a river from a waste disposal site.
- c) Explain how CFC decreases ozone concentration in the stratosphere. (5 + 2) + 4 + 4
9. a) What is meant by hardness of water?
- b) Can hard water be used in boilers or in laundries? Justify your answer.
- c) Discuss the sequential methods of raw water treatment.
- d) A sample of ground water has 140 mg/litre of Ca^{2+} ions. Express its hardness in units of mg/litre of $CaCO_3$.
- e) State Darcy's law.
- f) What do you mean by water softening? What are the methods of water softening? 1 + 2 + 4 + 2 + 1 + 5
10. Write short notes on any *three* of the following: 3 x 5
- a) Montreal Protocol
- b) Acid rain
- c) Advantages & disadvantages of cyclone separator and beghouse
- d) Logistic model for estimation of population
- e) Adverse effects of nuclear pollution.

11. a) Define BOD and COD.
- b) Discuss the principle of 5 days BOD test.
- c) Prove that, the relation $BOD_t = C_0(1 - e^{-kt})$ where the terms indicate their usual meaning. 5 + 5 + 5
12. a) What are the objectives of environmental management? What are the steps involved in it?
- b) How environmental audit is done? What is its utility?
- c) Compare and contrast the advantages of 'activated sludge' and 'trickling filter'.
- d) What is solid waste management? Discuss the effect of noise pollution on public health. 4 + 4 + 4 + 3

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