



Name :

Roll No. :

Invigilator's Signature :

**CS/MCA/SEM-4/HU (MCA)-401/2011
2011
ENVIRONMENT & ECOLOGY**

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 Questions)**

1. Choose the correct alternatives for any *ten* of the following : 10 × 1 = 10

i) Air pollutant, which reduces oxygen carrying capacity of haemoglobin, is

- a) carbon monoxide
- b) ammonia
- c) hydrogen sulphide
- d) none of these.

ii) The decomposers could be

- a) amoeba
- b) fungi
- c) earthworm
- d) all of these.

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- iii) Earth hour is celebrated to create consciousness about
- a) water pollution
 - b) noise pollution
 - c) global warming
 - d) deforestation.
- iv) The saturated value of DO is approximately
- a) 9 mg/L
 - b) 20 mg/L
 - c) 6 mg/L
 - d) 5 mg/L.
- v) The noise threshold limit value of sound level 110 dB is
- a) 30 minutes
 - b) 15 minutes
 - c) 2 hrs
 - d) 8 hrs.
- vi) Ozone is an essential component of
- a) troposphere
 - b) stratosphere
 - c) mesosphere
 - d) ionosphere.
- vii) In a seeded BOD test the dilution water contains
- a) distilled water
 - b) distilled water containing some microorganisms
 - c) distilled water containing some waste
 - d) none of these.
- viii) Minamata disease occurs due to
- a) arsenic pollution
 - b) lead pollution
 - c) mercury pollution
 - d) cadmium pollution.

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5. What is greenhouse effect ? How does it affect global warming ?
6. What do you mean by hardness of water ? Can hard water be used in boilers and laundries ?

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) What is noise pollution ? Discuss the adverse effects of noise on human health. 1 + 2
- b) Define noise threshold limit value. 2
- c) In a work area the noise levels are read as 95 dBA for 2 hrs a day, 90 dBA for 4 hrs a day, 80 dBA for remaining 2 hrs a day and permissible duration of each noise level is 95 dBA for 2 hrs, 90 dBA for 4 hrs and 80 dBA for 16 hrs. Find out the noise threshold limit value and predict whether the noise level is within permissible limit or not. 5
- d) Briefly explain control measures at receiver's end to reduce noise pollution. 5

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8. a) Name four air pollutants emitted from IC engine. 3
- b) Why do CO is taken as major air pollutant ? What is its source ? Write its effect on living being. How can its emission be controlled ? 2 + 2 + 2 + 2
- c) Compare photochemical smog and London smog. 4
9. a) Define "Energy Flow" in eco-systems. In an eco-system, although the inorganic nutrients are recycled, the flow of energy is not. Justify. 1 + 3
- b) State the composition of lithosphere. Mention the different types of solid wastes. 2 + 2
- c) Write down the disadvantages of Land-filling. 2
- d) Define the terms Habitat, Population, Bio-community, Ecological Niche and Species. 5

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10. a) What is Biochemical Oxygen Demand (BOD) ? 2

b) State the importance of adding azide in water samples before estimation of BOD. 3

c) Derive the equation

$$BOD_w = \frac{(DO_i - DO_f) - (B_i - B_f)(1 - P)}{P}$$

where, DO_i = initial dissolved oxygen of the mixture of waste water and seeded dilution water

DO_f = final dissolved oxygen of the mixture of waste water and seeded dilution water after 5 day period

B_i = Initial dissolved oxygen in the seeded dilution water (Blank)

B_f = Final dissolved oxygen in the seeded dilution water (Blank). 5

d) Why is the value of COD greater than the value of BOD for a given water sample ? Why is the value of BOD less than theoretical oxygen demand ? 2 + 3

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11. Write short notes on any *three* of the following : 3 × 5

- a) Confined and unconfined aquifer
- b) Mufflers
- c) Harmful effects of CO and SO₂
- d) Catalytic converter
- e) Ecological balance and instability.

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