



Name :

Roll No. :

Invigilator's Signature :

**CS/B.TECH (O)/SEM-1/CH-101/2012-13
2012**

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) The hottest region of the atmosphere is

- | | |
|----------------|------------------|
| a) Troposphere | b) Stratosphere |
| c) Mesosphere | d) Thermosphere. |

ii) BOD means

- | |
|------------------------------|
| a) Biological Oxygen Demand |
| b) Biochemical Oxygen Demand |
| c) Biggest Oxygen Demand |
| d) Both (a) and (b). |



iii) The temperature range of mesosphere is

- a) -2°C to -92°C
- b) 15°C to -56°C
- c) -56°C to -2°C
- d) -92°C to 1200°C .

iv) Freon is

- a) CF_3Cl
- b) CFCl_3
- c) CF_2Cl_2
- d) CHCl_3 .

v) The most potentially renewable energy resource is

- a) sunlight
- b) wind
- c) tidal energy
- d) biomass.

vi) ‘‘Itai itai’’ disease was caused by

- a) zinc
- b) cadmium
- c) lead
- d) mercury.



vii) In the industrial area noise is measured by

- a) L_{10} (18 hrs) index
- b) L_{eq}
- c) $L_e P_n$
- d) none of these.

viii) Which of the following can be used for disinfection of water ?

- a) Chlorine
- b) Hydrogen peroxide
- c) Ozone
- d) None of these.

ix) Trickling filter is classified under

- a) primary treatment
- b) secondary treatment
- c) tertiary treatment
- d) none of these.



x) Biotic factor of ecosystem is

- | | |
|-----------------|----------------------|
| a) solar energy | b) temperature |
| c) soil | d) plants & animals. |

xi) The term 'ecosystem' was coined by

- | | |
|------------|-------------|
| a) Odum | b) Krebs |
| c) Tansley | d) Haeckel. |

GROUP – B

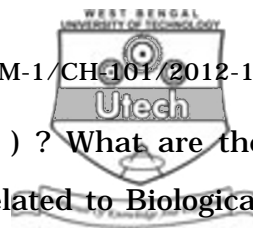
(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Write a short note on EIA.
3. Write down the phosphorous cycle in nature with the help of a suitable block diagram.
4. What do you understand by the term 'Maximum sustainable yield' ?

Prove that $N = k/2$ for maximum sustainable yield.

(Where N = population size and k = carrying capacity of a system)



5. What is Chemical Oxygen Demand (COD) ? What are the steps involved in COD test ? How is it related to Biological Oxygen Demand (BOD) ?
6. What is Global warming ? Analyse the causes and comment on the proposed remedial steps.

GROUP - C

(Long Answer Type Questions)

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

7. a) "Carbon dioxide, a non-pollutant, is perhaps the single most important environmental question facing us at present." — Discuss in terms of Green House effect. 3
- b) Name four Green House gases. 2
- c) What is the impact of global warming on the global climate and consequently on sea water level, agriculture and marine food ? 6
- d) Consider the earth to be a blackbody with average temperature of 15.0°C and surface area equal to $5.1 \times 10^{14} \text{ m}^2$. Find the rate at which energy is radiated by the earth and the wavelength at which maximum power is radiated. Compare this peak wavelength with that for a 5800-K black-body (the sun). 4



8. a) Define noise pollution. Discuss its various sources. 4
- b) How is human system affected with noise pollution ? 4
- c) What is 'dBA' ? 2
- d) What is the composition of Lithosphere ? 2
- e) What are the different types of solid wastes ? 3
9. a) What is acid rain ? Why is it called so ? 2
- b) What are the effects of acid rain ? 3
- c) 'Population never grows exponentially for ever.' —
Explain with suitable curve. 3
- d) What do you understand by ecological balance ? 2
- e) "Through the ecosystem, the inorganic nutrients are
recycled but flow of energy is unidirectional." — Justify
the above statement. 3
- f) Distinguish between renewable and non-renewable
sources of energy. 2



10. a) What is meant by hardness of water ? 2
- b) Can hard water be used in boilers or in laundries ?
Justify your answer. 2
- c) What are the biochemical effects of Cadmium and Arsenic ? 4
- d) State Darcy's Law. 2
- e) What do you mean by water softening ? What are the methods of water softening ? 5
11. Write brief notes on any *three* of the following : $3 \times 5 = 15$
- a) Cyclone separator
- b) Temperature inversion
- c) Eutrophication
- d) Sanitary land filling
- e) Hydraulic gradient
- f) Ventury scrubber.
