



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)  $-2^{\circ}\text{C}$  to  $-92^{\circ}\text{C}$
- b)  $15^{\circ}\text{C}$  to  $-56^{\circ}\text{C}$
- c)  $-56^{\circ}\text{C}$  to  $-2^{\circ}\text{C}$
- d)  $-92^{\circ}\text{C}$  to  $1200^{\circ}\text{C}$ .

iv) Freon is

- a)  $\text{CF}_3\text{Cl}$
- b)  $\text{CFCl}_3$
- c)  $\text{CF}_2\text{Cl}_2$
- d)  $\text{CHCl}_3$ .

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**

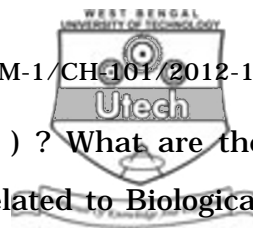
#### **( Short Answer Type Questions )**

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  $15.0^{\circ}\text{C}$  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.

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