



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.Tech/SEM-1/CH-101/2009-10**

**2009**

**ENVIRONMENT AND 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 :  $10 \times 1 = 10$

- i) Lapse rate refers to the rate at which
- a) population increases in area with increase in temperature
  - b) temperature decreases with increase in elevation
  - c) temperature decreases with decreases in elevation
  - d) none of these.



- ii) Greenhouse effect is due to
- a) over-cultivation of land
  - b) testing nuclear weapons
  - c) some atmospheric gases like  $\text{CO}_2$ ,  $\text{N}_2\text{O}$  and some man-made gases
  - d) none of these.
- iii) Air pollutant which reduces oxygen carrying capacity of haemoglobin is
- a) ammonia
  - b) hydrogen sulphide
  - c) carbon monoxide
  - d) sulphur dioxide.
- iv) Identify the prime constituent of smog :
- a) water
  - b) sulphur dioxide
  - c) carbon dioxide
  - d) hydrogen sulphide.
- v) Energy flow in an eco-system is
- a) unidirectional
  - b) cyclic
  - c) may be unidirectional or cyclic depending on condition
  - d) cannot be said.



- vi) Silicosis is a disease of
- a) noise pollution                      b) water pollution
- c) air pollution                      d) land pollution.
- vii) In aqueous environment, the microscopic animals are called as
- a) herbivores                      b) carnivores
- c) zoo plankton                      d) none of these.
- viii) The group of animals belonging to the same species is known as
- a) community                      b) population
- c) ecosystem                      d) monogroup.
- ix) The coenzyme responsible for conversion of mercury to methyl mercury is
- a) Vitamin  $B_{12}$                       b) Vitamin C
- c) Vitamin D                      d) Vitamin E.
- x) In hematotoxicity the targeted part is
- a) liver                      b) kidney
- c) blood                      d) brain.



xi) Which of the following is non-renewable energy source ?

- |          |                |
|----------|----------------|
| a) solar | b) coal        |
| c) wind  | d) geothermal. |

**GROUP – B**  
**( Short Answer Type Questions )**

Answer any *three* of the following. 3 × 5 = 15

2. What do you mean by maximum sustainable yield ? Prove the maximum sustainable yield is half of the carrying capacity (  $N = K/2$  ).
3. Write the toxicity of cadmium, lead, As ( III ) and  $\text{MeHg}^+$ .
4. What is PAN ? How does it form during photochemical smog ?
5. Describe the hydrologic cycle.
6. Write a short note on OTEC ( Ocean Thermal Energy Conversion ).



**GROUP – C**  
**( Long Answer Type Questions )**

Answer any *three* of the following.

3 × 15 = 45

7. a) 'Population never grows exponentially for ever'. Explain with suitable curve.
- b) 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 ).
- c) Mention the hazardous effects of noise pollution on public health.
- d) Define decibel ( dB ).
8. a) What do you understand by ecosystem and ecological balance ? Explain.
- b) Classify the components of ecosystem.

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- c) What are biotic and abiotic components ? Describe briefly the effect of abiotic factors on population.

4 + 4 + ( 3 + 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) What is meant by hazardous wastes ? Mention the special cares to be taken for their handling and disposal.

3 + 5 + 7

10. Write notes on any *three* of the following :

3 × 5

a) Advantages and disadvantages of wind energy

b) Venturi scrubber

c) Biogeochemical cycle

d) Adiabatic lapse rate

e) Environmental carrying capacity.



11. a) Give an outline of the sources of solid waste.
- b) Write down the various modes by which hazardous wastes can be minimized.
- c) What is 'Noise Dose' ? State some psychological effects of noise pollution.

5 + 5 + ( 2 + 3 )

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