Name : .....

Roll No. : .....

Invigilator's Signature : .....

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

2009

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 : $10 \times 1 = 10$

i) An air pollutant that reduce oxygen-carrying capacity of haemoglobin is

a) ammonia b) hydrogen sulfide

c) carbon monoxide d) carbon dioxide.

ii) Ozone is a pollutant when present in the

a) troposphere b) stratosphere

c) mesosphere d) thermosphere.

iii) MIC is a

a) primary pollutant b) secondary pollutant

c) criteria pollutant d) contaminant.

iv) For a sample of waste water containing both biodegradable and non-biodegradable waste is

a) BOD > COD b) BOD < COD

c) BOD = COD d) BOD • COD.

v) Lakes rich in nutrients is known as

a) Eutrophic lake b) Atrophic lake

c) Mestrophic lake d) Oligotrophic lake.

vi) Full form of ESP is

a) Electrostatic Precipitator

b) Electrostatic Producer

c) Electron Source Precipitator

d) None of these.

vii) The catalyst used in catalytic converter is finely divided

a) Ni b) P

c) Pt d) Fe.

viii) Organo mercury is example of

a) Fungicide b) Fumigant

c) Antibiotic d) Rodenticide.

ix) Fungi and bacteria carry out a very significant step in

a) grazing food chain b) detritus food chain

c) parasitic food chain d) all of these.

x) Living organisms are good examples of

a) closed system b) open system

c) isolated system d) none of these.

xi) Aspergillus bacteria play a significant role in the

a) nitrogen cycle b) phosphorus cycle

c) sulfur cycle d) oxygen cycle.

xii) The main constituent of London fog is

a) carbon monoxide b) hydrogen sulfide

c) carbon dioxide d) sulfur dioxide.

GROUP – B

(Short Answer Type Questions)

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

2. What is acid rain ? Write down the causes, reaction and effects of acid rain. 1 + 4

3. Write down the principal advantages and disadvantages of ESP and Cyclone separator. $2 \times 2\frac{1}{2}$

4. Define food chain. Discuss grazing food chain with examples. 1 + 4

5. Describe the nitrogen cycle with a diagram. 5

6. Define environment. What do you understand by environmental pollution ? Give an example. 2 + 2 + 1

GROUP – C

(Long Answer Type Questions)

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

7. Write notes on any *five* of the following : 3×5

a) Eutrophication

b) Pollutant and contaminant

c) Maximum sustainable yield

d) Ocean Thermal Energy Conversion (OTEC)

e) Logistic growth model of population

f) Hydrological cycle.

8. a) What is adiabatic lapse rate ?

   b) Discuss the toxic effects of Arsenic and Cadmium in human body.

   c) What are the types of solid wastes ?

   d) Discuss different types of aquifers.

   e) State Darcy's law. 2 + 5 + 3 + 3 + 2

9. a) Name three sources of thermal pollution.

   b) What do you understand by self-purification of a river ? State the various modes of self purification of a river or stream.

   c) "It is the physical characteristics of the particulates which are quite significant in air pollution". Comment.

   d) State & explain Wein's Law. How would you explain Green House effects with its help ? 3 + 4 + 4 + 4

10. a) Explain what is called critical dissolved oxygen and also state the effects of low DO on aquatic life. State the factors influencing DO.

    b) What is bio-degradation rate constant ?

    c) Write down the photochemical reactions for formation of ozone hole in stratosphere by CFC-12.

    [(3 + 3 + 3) + 3 + 3]

11. a) What is meant by hazardous wastes ? Mention the special care to be taken for their handling and disposal purpose.

    b) Explain the term 'Weathering of rock salt'.

    c) Define the terms De-oxygenation and Re-aeration.

    d) What is the hardness of water and how does it affect the water quality ? 5 + 3 + 4 + 3