Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/MCA/SEM-4/HU (MCA)-401/2012

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) WAS stands for
   a) Waste Activated System
   b) Waste Affected Slurry
   c) Waste Activated Sludge
   d) Waste Activation Stock.

ii) Which one is a primary pollutant ?
   a) Smoke b) Carbon monoxide
   c) PAN d) Carbon dioxide.

iii) The most potentially renewable energy source is
   a) sunlight b) wind
   c) tidal energy d) biomass.

iv) The main component of photochemical smog is
   a) water vapor b) sulphur dioxide
   c) oxides of nitrogen d) ozone.

v) Montreal Protocol is related to
   a) water pollution b) use of CFCs
   c) land pollution d) noise pollution.

vi) 'Itai Itai' disease was caused by
   a) zinc b) cadmium
   c) lead d) mercury.

vii) Trickling filter is classified under
   a) primary treatment b) secondary treatment
   c) tertiary treatment d) none of these.

viii) Air pollutant which reduces oxygen carrying capacity of haemoglobin is
   a) ammonia b) hydrogen sulphide
   c) carbon monoxide d) none of these.

ix) Total interacting of animals and plants, in any well defined area like pond is called
   a) eco system b) biosphere
   c) eco community d) biome.

x) Industrial effluents do not contain one of the following :
   a) Heavy metals
   b) Organic pollutants (oil, fats, etc.)
   c) Inorganic pollutants (acids, cyanides)
   d) Silt and mud.

xi) Coliform test is performed to detect
   a) *Salmonella* b) *Bacillus*
   c) *E.coli* d) none of these.

xii) Vermicomposting is not a kind of
   a) waste substance treatment
   b) way of energy generation
   c) a kind of organic culture
   d) Tricky method to control soil pH.

GROUP – B

(Short Answer Type Questions)

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

2. What is noise pollution ? Discuss the adverse effects of noise on human health. 2 + 3

3. define food chain. Discuss grazing food chain with examples. 2 + 3

4. Define bio-geochemical cycle. Describe the nitrogen cycle in brief. 2 + 3

5. Differentiate between the logistic and exponential population growth. $2 \times 2\frac{1}{2}$

6. Write a short note on the achievements of Montreal Protocol.

GROUP – C

(Long Answer Type Questions)

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

7. a) Distinguish between :

   i) Pollutant and Contaminant

   ii) Primary pollutant and Secondary pollutant. 2 + 2

   b) Name the regions of the atmosphere based on thermal structure. State their respective altitudes, temperature ranges and their principal constituents. Discuss the special features of the troposphere. 2 + 6 + 3

8. a) What is lithosphere ? 2

   b) What are the different types of solid wastes ? 4

   c) Discuss the methods of municipal waste disposal. 4

   d) Dsicuss special cases in disposing biomedical wastes. 5

9. a) What is environmental lapse rate and adiabatic lapse rate ? 4

   b) Discuss the phenomenon of formation of the ozone hole in tthe stratosphere. 6

   c) How the photochemical smog is formed ? How does it differentiate from the London smog. 5

10. a) Should carbon dioxide be treated as an air pollutant ? 1

   b) Classify the air pollutants depending upon their mechanisms of formation. Give examples. 3

   c) Discuss atmospheric dispersion taking the examples of smokestack plumes. 8

   d) Write down the advantage and disadvantage of electrostatic precipitator ? 3

11. a) What do you mean by primary and secondary treatment of wastewater ? Compare trickling filter with activated sludge system. 5

   b) How nitrogen is removed from wastewater ? 3

   c) Define BOD and COD stating the principles of these tests. 5

   d) State the effects of low DO on aquatic life. 2

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

   a) Biodegradation

   b) Renewable Energy sources

   c) Photochemical smog

   d) Arsenic pollution

   e) Noise pollution.