2014

Environment and Ecology

Time Allotted : 3 Hours *Full Marks : 70*

The figure in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable

GROUP A

1. Chose the correct answer for the following :- 10X1=10

   i) The chemical formula of CFC-II is

   a) $C_2 F Cl_5$ b) $CFCl_3$ c) CF_2Cl_2 d) $C_2F_2Cl_4$

   ii) Activated sludge treatment is a procedure of

   a) Primary treatment of water

   b) Secondary treatment of water

   c) Tertiary treatment of water

   d) None of these

   iii) Food grain production can under optimum conditions increase arithmetically while population increases

   a) uniformly b) arithmetically

   c) geometrically d) None of these

   iv) Audio range is between

   a) 20 Hz and 20000 Hz b) 20 Hz and 2000 Hz

   c) 200 Hz and 20000 Hz d) None of these

v) TOC means
   a) Total Organic Carbon
   b) Total Organical Carbon
   c) Total Organic Carbon dioxide
   d) None of these

vi) Which one of the following is true for a waste water sample?
   a) BOD > COD b) COD> BOD
   c) BOD = COD d) BOD = 1 / COD

vii) In logistic growth equation, zero population growth (ZPG) means
   a) dN/dt= 0 b) dN/dt>0 c) dN !dt< 0 d)none of these

viii) An example of a producer is
   a) fungus b) caterpillar
   c) bird d) moss

ix) Why is lime sometimes added to acid lakes?
   a) To lower the pH of the water
   b) To raise the pH of the water
   c) To kill poisonous fish
   d) To prevent eutrophication

x) The Montreal Protocol was an agreement on
   a) slowing down world population growth.
   b) reducing carbon dioxide emissions.
   c) reducing the production of chlorofluorocarbons.
   d) reducing the number of coal-fired power stations.

Group B

Answar any *three* of the following 3x5=15

2. a) Define sustainable development
   b) What do you mean by environmental degradation?
   c) Differentiate pollution and contamination. 2+1+2
3. What are the probable causes of water pollution in city. How do agricultural chemicals cause water pollution. 2+3
4. Disscuss the formation of Acid rain and its adverse effect. 3+2
5. With the help of a diagram describe nitrogen cycle. 5
6. What is the criterion for a waste to be hazardous waste. Classify hazardous waste. 2+3

Group C

Answar any *three* of the following 3x15=45

7. a) What is the harmful effect of CO in atmosphere. What is the role of catalytic convertor to control emission of CO.
   b) Mention one beneficiary effect and two harmful effects of greenhouse gases.
   c) Write any two harmful effects of photochemical smog and London smog. (2+3)2+3+(2.5+2.5)
8. a) What is Environment? Briefly describe the components of environment.
   b) Describe Environmental Impact Assessment. (2+8)+5
9 (a) Define the term 'ecology'. What is the difference between population ecology and community ecology?
   (b) Show that for the logistic growth of population the maximum sustainable yield is obtained when population is at half its carrying capacity.

(c) The human population follows the logistic curve which stabilizes at 16.0 billion. In year 2000, the world's population was 6.0 billion and its growth rate was 1.5 %. When would the population reach (i) 7.0 billion (ii) 13.0 billion.

(d) Why are there so few top carnivores, or tertiary and quaternary consumers, in ecosystems compared lo producers? (2+2+2)+3+4+2

10) What do you mean by primary and secondary treatment of waste water. Compare Trickling filter with activated sludge system.

Distinguish COD and BOD.

Define the principles of five day BOD test.

How COD is measured.

State the adverse effect of heavy metals in natural and waste water. 3+2+2+2+2+(2+2)

11. Write short notes on any three of the following 3x5=15

a) Environmental Degradation

b) Six structural components of Ecosystem

c) Aquifer

d) Components of Athmosphere

e) Conservation of biodiversity

____x-x-x____