



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS / B.TECH(BT-N) / SEM-3 / CH(BT)-301 / 2011-12**

**2011**

**BASIC ENVIRONMENTAL ENGINEERING AND  
ELEMENTARY BIOLOGY**

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 the following :  $10 \times 1 = 10$ 
  - i) PAN is a type of
    - a) primary air pollutant
    - b) secondary air pollutant
    - c) composite air pollutant
    - d) radioactive pollutant.
  - ii) Air pollutant which reduces oxygen carrying capacity of haemoglobin is
    - a) Ammonia
    - b) Hydrogen sulphide
    - c) Carbon monoxide
    - d) none of these.
  - iii) Hazardous waste should have characteristics such as
    - a) Reactivity
    - b) Corrosivity
    - c) Toxicity
    - d) all of these.



- iv) Oxygen demanding waste is
- a) Inorganic pollutant      b) Radioactive material  
c) Organic pollutant      d) none of these.
- v) Itai-Itai disease is related to
- a) Hg      b) As  
c) Pb      d) Cd.
- vi) Which one is the slowest biochemical cycle ?
- a) Oxygen cycle      b) Phosphorus cycle  
c) Nitrogen cycle      d) Sulphur cycle.
- vii) Ozone acts as a pollutant when resides in
- a) stratosphere      b) troposphere  
c) mesosphere      d) ionosphere.
- viii) Energy flow of an ecosystem is
- a) unidirectional  
b) may be unidirectional or cyclic  
c) cyclic  
d) cannot be said conclusively.
- ix) The grazing food chain starts from
- a) Fungi      b) Bacteria  
c) Green plants      d) Animal decomposers.
- x) The value of earth's albedo is
- a) 0.21      b) 0.31  
c) 0.021      d) 0.031.



**GROUP – B**

**( Short Answer Type Questions )**

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

2. a) What do you mean by atmospheric stability? 2
- b) Discuss superadiabatic and subadiabatic lapse rate. 3
3. Discuss the principle of electrostatic precipitator as an air pollution control device.
4. Write a short note on bio-diversity.
5. Discuss about the regulatory mechanism of cell cycle.
6. Briefly describe the Ames Test.
7. Give a view on effects of abiotic factor on population growth.

**GROUP – C**

**( Long Answer Type Questions )**

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

8. a) Draw the food chains for grazing and detritus type.
- b) Describe the various types of cohabitation of organism with examples.
- c) Draw the food web for forest ecosystem.  $4 + 8 + 3$
9. Write short notes on any *three* of the following:  $3 \times 5$ 
  - a) Eutrophication
  - b) EIA
  - c) Criteria pollutant
  - d) Coagulation and flocculation
  - e) Trickling filter
  - f) Activated sludge process.



10. a) Define smog.
- b) What is the main byproduct pollutant of smog? Explain with mechanism.
- c) What is the difference between sulphurous smog and photochemical smog?
- d) What are the effects of smog on living organism?

2 + 1 + 8 + 2 + 2

11. a) Define BOD and COD.
- b) Why COD determination is necessary before the test for BOD?
- c) State the factors that influence the amount of DO in a water body.
- d) What do you mean by oxygen sag curve? 5 + 3 + 2 + 5
12. a) What is non-disjunction? Give example of one syndrome in humans.
- b) Briefly describe deletion and inversion with labelled diagrams.
- c) Categorise mutagens with examples of each. 4 + 7 + 4

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