



Name :

Roll No. :

Invigilator's Signature :

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

2011

**BASIC ENVIRONMENTAL ENGG. 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) Which of the following is non-point source of water pollution ?
 - a) Factories
 - b) Urban and Sub-urban land
 - c) Sewage treatment plant
 - d) None of these.
 - ii) Which of the following is a Micronutrient ?
 - a) Sulpher
 - b) Carbon
 - c) Potassium
 - d) Iron.



iii) Permissible sound level in a commercial area in day time is

- a) 90 dB
- b) 65 dB
- c) 80 dB
- d) none of these.

iv) Adiabatic lapse rate is

- a) $0.8^{\circ}\text{C}/100\text{ m}$
- b) $0.7^{\circ}\text{C} / 100\text{ m}$
- c) $1^{\circ}\text{C} / 100\text{ m}$
- d) none of these.

v) As per the CBCB standard for discharge of treated municipal waste water into inland surface water is

- a) 150 mg/L
- b) 30 mg/L
- c) 50 mg/L
- d) none of these.

vi) Colour of textile waste water can be measured in which of the following units ?

- a) NTU
- b) Hazen
- c) Lumen
- d) Nanometer.



vii) According to United Nations the year 2011 is dedicated as the International year of

- a) Water Management b) Forests
- c) Noise Pollution d) Bio-diversity.

viii) Photochemical smog gives rise to

- a) carbon dioxide b) carbon monoxide
- c) PAN d) PM -2.

ix) The size of RSPM is

- a) 10 μ b) 20 μ
- c) 2.5 μ d) none of these.

x) The use of Poly Aluminium Chloride in drinking water plant is restricted now as

- a) it increases sludge volume
- b) it retards precipitation
- c) the material has carcinogenic effect
- d) lacks in anti-bacterial effect.

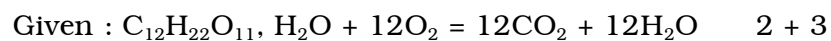


GROUP – B

(Short Answer Type Questions)

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

2. a) A pollutant may be considered as resource out of place. Explain this statement.
- b) In the above context name some pollutants present in municipal waste water which may be regarded as resources in some other places. $2 + 3$
3. a) Explain the relationship between the adiabatic lapse rate of a rising plume of stack gas and the ambient lapse rate.
- b) Explain briefly the principle of catalytic converter. $3 + 2$
4. a) Define Biochemical Oxygen Demand. How does it reflect the amount of organic matter present in a waste water indirectly ?
- b) What do you mean by Theoretical Oxygen Demand ? Find the Theoretical Oxygen Demand value of 1000 mg/l of Lactose ($C_{12}H_{22}O_{11}$, H_2O , Mol, wt. = 360) solution.





5. State and explain few salient points of Disaster Management cycle with the help of a diagram. 5

6. a) What is Sanitary Land fill ?

b) What component of Municipal solid waste would be preferred to be disposed of by Sanitary Land fill Method ?

c) Which fraction of solid waste is generally subjected to composting ?

d) What is the approximate calorific value of Kolkata Municipal solid waste ? 2 + 1 + 1 + 1

7. a) Define noise.

b) What is dBA ?

c) Enumerate few steps to control in-house noise pollution. 1 + 1 + 3



GROUP – C

(Long Answer Type Questions)

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

8. a) Microbial growth is a good example of autocatalytic reaction. Discuss the statement.
- b) With reference to atmospheric stability, describe briefly under which condition of atmosphere it becomes unstable.
- c) Write short notes on biosphere. $5 + 5 + 5$
9. a) Name five different categories of proteins and describe the enzymes which represent the largest class of protein.
- b) How autotrophic bacteria differs from heterotrophic bacteria with regard to their carbon source and energy source ? $10 + 5$
10. a) Define Macronutrients and Micronutrients with suitable examples.
- b) What are growth factors ?
- c) Describe the TCA cycle briefly giving examples.



- d) Briefly give an overview of the light phase and dark phase of photosynthesis with reactions. 4 + 3 + 4 + 4
11. a) Enumerate the differences between prokaryotic and eukaryotic cells.
- b) Describe the structure of deoxyribonucleotide with a diagram.
- c) Write the salient steps of Environmental Impact Assessment. 5 + 5 + 5

