

B.Tech/ BT/CHE/CSE/IT/ 3rd Sem/CHEM-2001/2016

2016

BASIC ENVIRONMENTAL ENGINEERING & ECOLOGY

(CHEM 2001)

Time Allotted : 3 hrs

Full Marks : 70

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternative for the following:

[10 x 1=10]

- i) Ozone is a pollutant when present in
a) troposphere b) stratosphere c) mesosphere d) ionosphere
- ii) Gene bank is one kind of
a) ex situ conservation b) hot spot
c) artificial ecosystem d) in situ conservation
- iii) Temporary hardness of water is due to the presence of
a) Cl^- b) SO_4^{2-} c) PO_4^{3-} d) HCO_3^-
- iv) Blue baby syndrome is related to
a) nitrite b) sulphate c) phosphate d) carbonate
- v) Which of the following is a primary air pollutant?
a) SO_2 b) O_3 c) PAN d) HCHO
- vi) Human speech is in the range of
a) 20-20000Hz b) 2000-5500Hz
c) 200-3000Hz d) none of these

GROUP - C

- 4 a) On the basis of global temperature model(including earth's ALBEDO) prove that the earth's surface temperature is -19°C .
- b) How is sulphurous smog formed? What are the effects of sulphurous smog?
- c) Write a short note on (i) Kyoto Protocol (ii) Cyclone separator.

$$(3)+(2+3)+(2+2) = 12$$

- 5 a) What is the average temperature of the earth's surface considering the earth to behave as a black body? (ignore earth's ALBEDO)(Solar constant $S = 1372 \text{ W/m}^2$ and Stefan Boltzmann constant $\sigma = 5.67 \times 10^{-8} \text{ W/m}^2\text{K}^4$)
- b) What is global warming? What are the effects of global warming?
- c) What are the effects of ozone layer depletion? What is importance of Montreal protocol on control of CFC?

$$(3)+(2+3)+2+2 = 12$$

GROUP - D

- 6 a) Write the Darcy's Law.
- b) Write the differences between BOD and COD.
- c) What is eutrophication? Discuss different types of Eutrophication.
- d) What is noise pollution? Calculate the intensity of 100dB sounds.
(Reference intensity = $1 \times 10^{-12} \text{ w/m}^2$)

$$2+3+(1+3)+1+2=12$$

- 7 a) Describe with figure different kinds of aquifers.
- b) What are the sources of Mercury(Hg) contamination in water? Describe the biochemical effects of the above heavy metal.
- c) What are oxygen demanding wastes? Give examples.
- d) What is dBA scale ? What are the drawbacks of dBA scale?

$$(3)+(1+2)+(1+1)+(2+2)=12$$

GROUP - E

- 8 a) Write a short note on landfill. Write its advantages and disadvantage.
b) What is recycling ? How will you convert waste to wealth?
c) What is environment management? What are the main components of environment management?

(3+2)+(1+3)(1+2)=12

- 9 a) Write down the differences between Environmental Auditing(EA) and Environmental Impact Assessment(EIA).
b) What is the requirement of Green Chemistry in today's scientific world?
c) What are the biomedical wastes? What is the best way to dispose biomedical wastes?
d) Discuss with diagram the working principle of modern sanitary landfill process for the safe disposal of solid waste.

3+3+(1+1)+4=12
