CS/B.Tech/EE/ECE/AEIE/EEE/ICE/PWE/BME/BT/FT/
Even/4th Sem/CH-401/2014

2014

Basic Environmental Engineering & Elementary Biology

Ime Alloted : 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
(Multiple Choice Type Questions)

Choose the correct alternatives for any ten of the following:

$10 \times 1 = 10$

i)   In the industrial area noise is measured by

     a) L_{10} (18hrs) index

     b) L_{eq}

     c) L_eP_n

     d) none of these

ii)   The full form of EQI is

     a) Environmental Quality Information

     b) Environmental Quality Index

     c) Environmental Quotient Information

     d) Environmental Quotient Index

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iii) Coliform test is performed to detect

a) *Klebsiella*

b) *Staphylococcus*

c) *E.coli*

d) none of these

iv) Environmental Impact assessment (EIA) needs to

a) Start a project

b) Stop a project

c) Evaluate a project

d) none of these

v) The coldest region of the atmosphere is –

a) Troposphere

b) ionosphere

c) Mesosphere

d) Stratosphere

vi) El Nino starts from

a) Mediteranean coast

b) Chinese coast

c) South American coast

d) Indian coast

vii) The best method of disposal of non – hazardous solid wast

a) Open dumping;

b) Sanitary land filling;

c) Incineration;

d) Composting

viii) Which of the following are likely to be present in photochemical smog?

a) Alcohol

b) Aldehyde

c) Ether

d) SO_2

ix) Which is not a mege diversity country?

a) India

b) China

c) Mexico

d) Argentina

x) Species with very restricted distribution over relatively small ranges is called

a) Endangered species

b) Extinct species

c) Endemic species

d) none of the above

xi) The catalyst used in catalytic converter is finely divided

a) Ni

b) P

c) Pt

d) Fe.

xii) The value of albedo of the planet Earth is

a) 0.21

b) 0.31

c) 0.41

d) 0.51.

082   3   [Turn over]

GROUP - B
(Short Answer Type Questions)
Answer any *three* of the following.   3x5=15

2. a) what do you understand by the term 'Maximum Sustainable / yield'?

   b) Prove that N = k/2 for maximum sustainable yield. Where N = No. of population k = carrying capacity

   2+3

3. What is COD? What are steps involved in COD test? How is it related to BOD?

   1+2+2

4. Write down the Sulphur cycle in nature with the help of a suitable block diagram.

   5

5. Explain the basic principal of tracking a pollutant in an environment.

   How a pollutant can be tracked when pollutant concentration entering the system changes suddenly?

   3+2

6. a) What do you understand by acid – rain?

   b) What are its detrimental effects on the environment?

   2+3

GROUP - C
(Long Answer Type Questions)
Answer any *three* of the following.   3x15=45

a) Consider earth to be a black body having average temperature of 15°C and surface area equal to $5.1 \times 10^{14} m^2$. Find the rate at which energy is radiated by the earth and the wavelength at which the maximum energy is radiated. Given that Stefan – Boltzmann constant,

   $\sigma = 5.67 \times 10^{-4}$ Wm^{-2} K^4

b) Describe the effects of greenhouse gases on global warming.

c) How does the earth manage its radiation balance to maintain an average surface temperature of 15°C?

   (5+5+5)

(I) Discuss the hydrological cycle showing the water balance of the Earth. What role is played by man in the hydrological cycle?

(ii) Distinguish between an aquifer and an aquitard.

(iii) State Darcy's law for groundwater flow and hence define hydraulic conductivity.

(iv) A confined aquifer 30 m thick, has two monitoring well placed 600 m apart along the direction of groundwater flow. The difference in piezometric head in the wells is 2.0 m. The hydraulic conductivity is 50 m/day. Calculate the flow rate pe meter of distance perpendicular to the flow.

(4+1)+2+(2+2)+4

9. a) Define biodiversity and biome with examples.

b) Draw the food web for a forest ecosystem.

c) Discuss different conservation strategies with examples.

(2+2)+4+1

10. What is important of waste water treatment? Briefly describe the steps of surface water treatment procedure. What is the primary and secondary treatment procedures for industrial waste water treatment? Write short notes on hardness of water.

1+5+(3+3)+3

11. **Write short notes on any *three* of the following** -

3x5

i) Baghouse filter

ii) PAN

iii) SPM

iv) Oxidation pond

v) Biomedical waste

vi) Hot spot