

Total number of printed pages – 4

B. Tech
HSSM 4403

Eighth Semester Examination – 2008

ENVIRONMENTAL ENGINEERING

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory
and any **five** from the rest.

The figures in the right-hand margin
indicate marks.

1. Explain in brief : 2×10
- (i) Criteria pollutants
 - (ii) Oxygen sag curve
 - (iii) Anaerobic digestion
 - (iv) Environmental gradients
 - (v) Bio-solids

P.T.O.

- (vi) Ultimate BOD
 - (vii) Maximum mixing depth
 - (viii) Sludge volume index
 - (ix) National ambient air quality standards
 - (x) Energy budgets.
2. (a) List the four factors that reduce the amount of direct runoff. 4
- (b) Show the flow of energy in an ecosystem with the help of neat line diagram. 6
3. (a) What objections could be there if turbidity and chlorides are present in excess in water? 4
- (b) The pH of two different samples collected from the effluents discharged from a steel plant and a power plant is found as below. Find the pH of their mixed sample. 6
- Steel plant : volume – 100 ml ; pH-6.0
- Power plant : Volume- 900 ml ; pH-5.0

4. Change in concentration of organic matter, L with time, t , is given by $\frac{dL}{dt} = -k.L$.

Calculate the organic matter remaining after 3 days if the initial concentration was 200 mg per litre. $k = 0.4$ per day. 10

5. (a) Draw flow diagram of a modern water treatment plant and show the different units on it. 6
- (b) List four major air pollutants for which the Central Pollution Control Board of India designated ambient air quality standards. 4
6. (a) Define sludge volume index and explain its use in the design and operation of an activated sludge treatment plant. 6
- (b) Compute the mean sound level from the following four readings (all dBA) : 38, 51, 68 and 78. 4

7. (a) List four disposal techniques of hazardous wastes. 4
- (b) What type of collection devices would you propose for installation in a steel plant to collect particulate matters containing iron oxide, dust and smoke? 6
8. (a) Explain how environmental impact assessment process is considered as a project management tool. 5
- (b) What are the benefits of adopting waste minimization techniques in industries? 5