

IV B.Tech I Semester Supplementary Examinations, November 2005
ENVIRONMENTAL ENGINEERING
(Chemical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. What are the ill effects of land disposal of industrial effluent? Explain in detail.
[16]
2. (a) In general, it can be stated that the COD of sewage is higher than its BOD - Give reasons.
(b) The BOD of a sewage incubated for one day at 30°C is found to be 100 mg/l. What will be the 5-day BOD at 20°C ? Assume the deoxygenation constant as 0.1 at 20°C . [8+8]
3. (a) A coal fired boiler burns 8 tons of coal (containing 5% sulphur) h and discharges through stack, the effluent gases containing sulphur dioxide. The effective stack height is 175m while the wind speed at the top of the stack is 5 m/s. When the atmosphere is unstable (category-C), estimate
 - i. Maximum ground level concentrations at the cross section of the stack
 - ii. at 4 km downwind distance.(b) Explain the fixed box model briefly? [10+6]
4. (a) Explain the terms inertial force and sweeping force with reference to the cyclone separators? How are these expressed?
(b) A particle of $1\ \mu$ size is travelling in a stream of gas with a velocity of 5 m/s in a circular path of radius 0.2m. Calculate the ratio of centrifugal force to the gravitational force acting on it. The value of $g = 9.81\ \text{m/s}^2$. [8+8]
5. Explain No_x pollution control for combustion operation with suitable examples.
[16]
6. Explain the classification biological treatment processes for wastewater. [16]
7. (a) What are maturation ponds. Explain.
(b) With the help of a neat sketch explain the working principles of stabilization ponds. [8+8]
8. Discuss the salient features of various methods used in industries for pollution control using primary treatment techniques. [16]
