

Code No: C5107

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY 2012
ADVANCED ENVIRONMENTAL ENGINEERING
(CHEMICAL ENGINEERING)**

Time: 3hours**Max.Marks:60**

**Answer any five questions
All questions carry equal marks**

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- 1.a) What is Environment and describe details of the Atmospheric Structure?
- b) What do you understand by the term inversion? Explain the cause and effects of inversion.

- 2.a) Define and explain the term sampling? Explain the sampling methods of air pollutants.
- b) Calculate the suspended particulate matter concentration in the ambient air from the following high volume air sampler data: Average pressure of the day at station level = 725 mm of Hg, Average temperature = 25⁰C, Actual sampling time = 10 hrs, Sampling rate at the beginning = 3m³/min, Sampling rate at the end = 2.5m³/min, Weight of filter paper before exposure = 3.417 g, Weight of filter paper after exposure = 3.925 g,

- 3.a) Explain the process of sludge digestion.
- b) Design an oxidation pond for the treatment of sewage for an industrial town of population 3000 and the sewage flow is 125 l/c/day. Standard 5 day BOD of the sewage is 350 mg/l. Depth of tank may be taken as 1.0 m assume BOD loading as 250 kg/day/Hectare.

- 4.a) What do you understand by the efficiency of a trickling filter? How do you determine the efficiency, using NRC formulae?
- b) State advantages and disadvantages of a conventional trickling filter.

- 5.a) Describe the source correction method of air pollutants.
- b) Explain the control measures for SO₂, NO_x and CO

- 6.a) Give various flow diagrams used for single stage and two stage trickling filters. How do you determine the efficiency of these, using NRC formula?
- b) Explain with the help of a flow diagram the essentials of a activated sludge process of wastewater with the river water.
(i) Combined discharge (ii) BOD (iii) DO, and (iv) Temperature.

- 7.a) Differentiate clearly between attached growth processes and suspended growth processes. List various treatment techniques falling under each such process.
- b) Why dewatering of sludge is necessary? Explain the method of dewatering the sludge on sludge on sludge drying beds.

- 8.a) What do you understand by Solid waste management? Explain the sources of solid waste.
- b) Enumerate the different methods of solid waste disposal and explain any one in detail.
