

## MANIPAL INSTITUTE OF TECHNOLOGY MANIPAL UNIVERSITY



## II SEMESTER M. TECH. INDUSTRIAL POLLUTION CONTROL END SEMESTER EXAMINATION MAY 2016

## SUBJECT: ENVIRONMENTAL QUALITY & POLLUTION MONITORING TECHNIQUES (CHE 578)

## Time: 3 HOURS

Max.Marks: 100

Note: Answer **ANY FIVE FULL** questions Each question carries 20 Marks

<b>1A</b>	List the causes of agricultural land pollution. Discuss analysis of soil	4+6=10
	pollutants.	
1B	What is the significance of the following characteristics of wastewater?	5*2=10
	(i)Turbidity (ii) Volatile solids (iii) Temperature (iv) Alkalinity (v) BOD	
	Explain.	

2A	Discuss the principle and working of an instrumental method for TOC analysis with a neat schematic diagram.	10
2B	Differentiate between UV-Visible Spectrophotometer and Atomic Absorption Spectrophotometer.	5
2C	A pesticide is to be tested for the presence of component A. Explain a step	5
	wise procedure to identify the presence of A in a mixture of A, B and C	
	using Thin Layer Chromatography.	

<b>3A</b>	Draw a neat schematic diagram of the High Pressure Liquid Chromatography	10
	apparatus. Label each component and write its function.	

38	A 3 test-tube MPN test for quantification of coliform bacteria showed the following result. Sample was collected, out of which 1 ml was taken in a test tube and made up to 10 ml. This series dilution was continued until 10 <sup>7</sup> dilution. 1 ml sample from each dilution was inoculated in culture media. The cultures were incubated and analysed for presence of coliform bacteria.	6
	Calculate the number of coliform bacteria per ml of the original sample? (Statistical table is attached)	
	SET 1 SET 1 SET 2 SET 3 SET 4 SET 4 SE	
	SET 5 SET 6 SET 7	
<b>3</b> C	i) What is H <sub>2</sub> S Strip method for microbiological examination of wastewater?	2+2=4
	<ul><li>ii) How is Durham tube used during microbiological examination of wastewater?</li></ul>	

<b>4</b> A	Describe SO <sub>2</sub> measurement by	
	i) Improved West and Gaeke method and	5
	ii) UV Fluorescence method	5
<b>4B</b>	Explain any two methods of analysis of NO <sub>x</sub>	10

5A	How can the air pollution sampling be classified based on the time and	2
	frequency of sampling.	8
	List and explain the considerations and difficulties to be taken care of while	
	sampling air pollutants.	
5B	Explain the theory and working of a Mass Spectrometer with neat diagram	10

6A	Discuss the principal and working of	
	i) electrostatic precipitator and	5
	ii) thermal precipitator, for particulate measurement	5
6B	State the Indian Pollution control board standards for ambient sound levels?	4
	What are the methods that can be used to control noise pollution?	4
	List the instruments that are used to measure noise pollution?	2