Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. Sem. – IInd - Examination – June/July- 2011

Subject code: 1721707

Subject Name: Air Pollution Control

Date:29/06/2011 **Time: 10:30 am – 01:00 pm**

Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Define " Air Pollution". Write a brief essay on " Episodes of Air Pollution". **07**

(b) Explain how transportation has become an important source of air pollution. **07**

Q.2 **(a)** State the objectives of stack monitoring. sketch the sampling train of stack monitoring train. And explain the functions of each part. **07**

(b) What is Aerosols. Give classification of Aerosols. State the importance of RSPM. **07**

OR

(b) What is "Isokinetic Sampling"? State its importance. **07**

Estimate the amount of dustfall using the following data:

- Diameter of jar = 30 cm
- Period of exposure = 30 days
- Initial weight of filter paper = 1.925 g
- Final Weight of filter paper = 2.015 g
- Amount of sample at the time of analysis =950 ml
- Dissolved solids = 0.073 g/100 ml.

Q.3 **(a)** Explain Mixing Height. Define "Maximum Mixing Depth." How it is determined? What is it significance in air pollution control? **07**

(b) Explain "BOX Model" for atmospheric dispersion of pollutant. Estimate the concentration of carbon monoxide using the " Box Model" for a town having length of 3 km. Mixing height may be assumed as 250 m and the wind velocity as per meteorological records is 5 km/hour. It is monitored that the CO emission is 2.5 kg/m^2/day. **07**

OR

Q.3 **(a)** Explain the influence of meteorological factors on air pollution. **07**

(b) An industry utilizes 0.25 Ml of oil fuel per month. It has also been estimated that for every 1 Ml of fuel oil burnt in the factory, per year (Effective working days are 300), the quantities of various pollutants emitted are given as: **07**

Particulate matter = 3.0 t/yr, SO_2 = 30 t/yr, NOx = 7 t/yr, HC = 0.3 t/yr, CO = 0.4 t/yr

Calculate the height of the chimney required to be provided for safe dispersion of the pollutants.

Q.4 **(a)** Mention the effects of following air pollutant of human, animal and plants." **07**

(i) SO_2 (2)NOx (3) Flourides

	(b)	Write short note on "Ozone Layer Depletion."	**07**
		OR	
Q.4	**(a)**	Write short note on the Indian Standards for ambient air Quality.	**07**
	(b)	Explain the Guidelines for locating industries with reference to air pollution.	**07**
Q.5	**(a)**	Describe the methods of automobile air pollution control.	**07**
	(b)	Describe the working of a Fabric Filter with a neat sketch. Discuss its advantages and Disadvantages,	**07**
		OR	
Q.5	**(a)**	Using the following data of a venture scrubber, estimate the average liquid droplet size in the scrubber by Nukiyama and Tanasawa Equation: • Gas flow rate = 0.06 m3/sec • Liquid flow rate = 0.4 l/min • Throat area = 7.5 cm^2 • Surface tension of liquid= 72 dynes/cm • Dynamic viscosity of liquid =0.00982 poise • Density of liquid = 1g/cm^3	**07**
	(b)	Name and Describe different types of Adsorption units for controlling Gaseous pollutants.	**07**

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