Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER I (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2711801 **Date:16/05/2016**

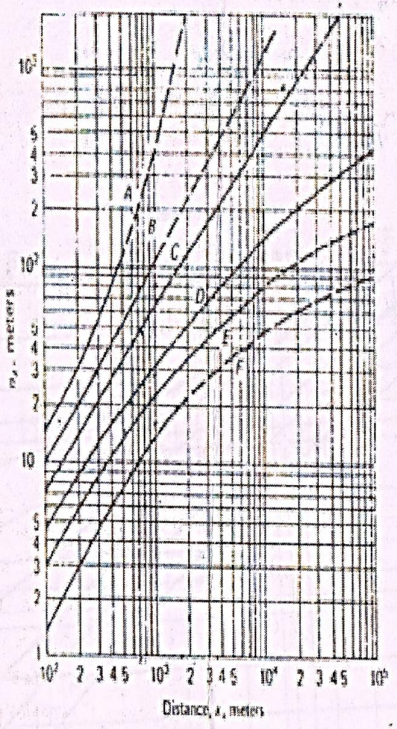
Subject Name: Application based systems for Air Pollution control

Time:02:30 pm to 05:00 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)**	Explain construction and working of Bag filter.	**07**
	(b)	Write a short note on Windrose diagram.	**07**
Q.2	**(a)**	Explain the sources of particulate matter in the ambient atmosphere. Highlight the effects of particulates on human health and surfaces.	**07**
	(b)	The rate of emission of SO_2 from the stack of a power plant is 126.1 g/s. The effective height of the stack is 4 6 m. Calculate the SO2 concentration in ppm at a parking lot located 900 m downwind from the stack on a sunny October day when the wind velocity is 4.0 m/s. Use Class C stability .	**07**
		OR	
	(b)	A co al-burning electric genera ting plant emits 1.1 kg/min of SO2 from a stack with an effective height of 60 m. On a thinly overcast evening, with a wind speed of 5.0 m/s , what will be the ground level concentration of SO2 500 m directly downwind from the stack?	**07**
Q.3	**(a)**	Explain the stability conditions of the atmosphere with the help of neat sketches.	**07**
	(b)	What is plume rise? What is its importance in dispersion of pollutants? Write down the plume rise equations.	**07**
		OR	
Q.3	**(a)**	Explain following plume rise phenomena: 1. Fanning plume 2. Looping plume 3. Lofting 4. Trapping	**07**
	(b)	Write note on High volume air sampler for sampling of ambient air.	**07**
Q.4	**(a)**	Enlist and explain the common air pollutants emitted from mobile sources.	**07**
	(b)	Explain control of automobile pollution by changes in engine design.	**07**
		OR	
Q.4	**(a)**	Explain the construction and working of cyclone separator along with a neat sketch.	**07**
Q.4	**(b)**	Write notes on nitrogen oxides control methods with neat sketch	**07**
Q.5	**(a)**	Explain the methods to control SO_2 emissions.	**07**
	(b)	Enlist the advantages and disadvantages of electrostatic precipitators (ESP).	**07**
		OR	
Q.5	**(a)**	Explain particulate collection mechanisms.	**07**
	(b)	Write a note on 'Adsorption for control of air pollutants.'	**07**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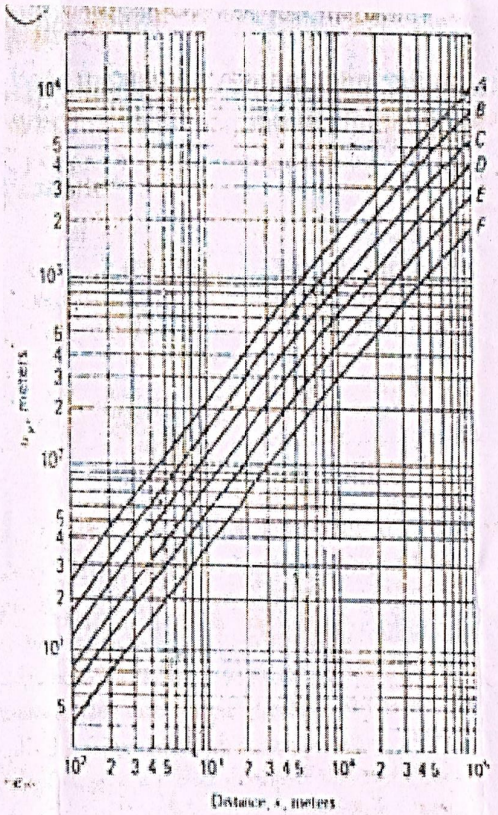
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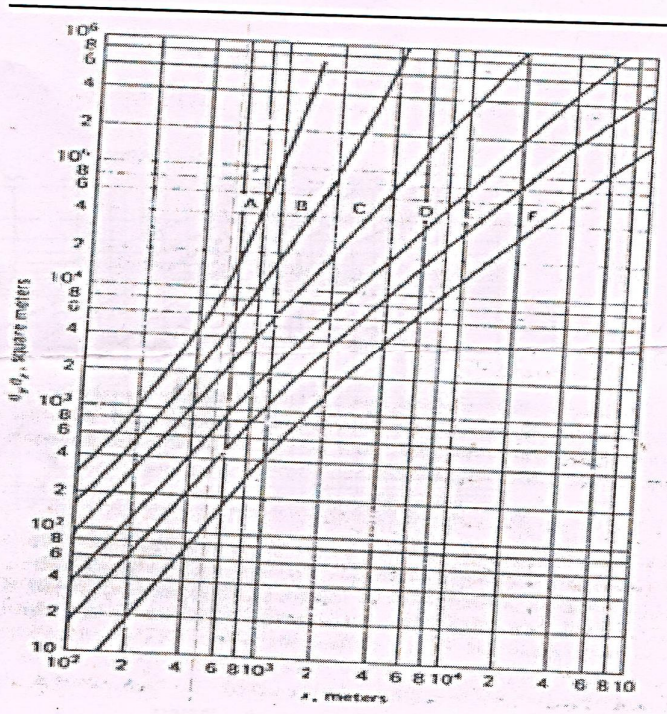
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