Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V EXAMINATION – SUMMER 2025

Subject Code:3151309 Date:28-05-2025

Subject Name:Fundamentals of Air Pollution

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

Q.1	**(a)**	Write down the effects of SO_2 & Particulate Matter (PM) on Human health.	**03**
	(b)	Explain the Stationary & Mobile sources of air pollution with suitable examples.	**04**
	(c)	Define wind rose diagram & discuss its application in environmental engineering field.	**07**
Q.2	**(a)**	Differentiate between Environmental lapse rate (ELR) & Dry adiabatic lapse rate (DALR).	**03**
	(b)	Name the primary meteorology parameters that affects air pollution & define Coriolis force.	**04**
	(c)	Enlist the stability condition of atmosphere and explain any one type with diagram.	**07**
		OR	
	(c)	Write a short note on Heat Island effect with figure.	**07**
Q.3	**(a)**	Define the terms; 1. Wavelength 2. Sound power 3. Sound pressure	**03**
	(b)	Write a short note on effects of noise on Human.	**04**
	(c)	Discuss the six types plume behaviors with neat sketch.	**07**
		OR	
Q.3	**(a)**	Enlist the characterization of Odour.	**03**
	(b)	Give the classification of Odor pollution reduction technology.	**04**
	(c)	Differentiate between Radiation inversion & Subsidence inversion.	**07**
Q.4	**(a)**	Draw a neat sketch of high volume air sampler (HVAS) & label the components.	**03**
	(b)	With reference to atmospheric photochemical reaction, explain in detail Hydrocarbon reactivity.	**04**
	(c)	Write down the Gaussian dispersion equation & discuss the assumptions thereof.	**07**
		OR	
Q.4	**(a)**	Compare stack monitoring & ambient air quality monitoring.	**03**
	(b)	Enlist the photochemical oxidants and write the reactions of their formation.	**04**
	(c)	Write a down a procedure for determination of effective stack height.	**07**
Q.5	**(a)**	Draw general wind velocity profile for rural & urban area.	**03**
	(b)	The average daily concentration of SO_2 is observed to be 350 $\mu g/m^3$ at 25^0c and 1 atm pressure at a given location. What is the concentration of SO_2 in ppm. ?	**04**
	(c)	Briefly Explain the Iso-kinetic condition with neat sketch.	**07**
		OR	
Q.5	**(a)**	Write a short note on maximum mixing depth with neat sketch.	**03**

(b) Find out the flow of flue gas and particulate matter concentration in mg/Nm^3. Type of fuel is lignite (Mata no madh), fuel consumption is 1.5 T/day. Assume suitable data. **04**

(c) Define Traverse Point. Enlist the steps for particulate matter sampling from the point source. **07**

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