Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) EXAMINATION – SUMMER 2024

Subject Code: 3151309 Date:31-05-2024

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 effect of SO_2 & CO on Human health.	**03**
	(b)	Give the classification of air pollutants with the examples.	**04**
	(c)	Write a short note on iso kinetic sampling.	**07**
Q.2	**(a)**	Write down the application of the following equipment; 1. Anemometer 2. Thermocouple 3. Manometer	**03**
	(b)	Make a list of fuels and name the potential air pollutants generated from each type of fuels.	**04**
	(c)	Define the Lapse Rate & Derive the Dry adiabatic lapse rate (DALR) $dt/dz = 10^{o}$ C/100 m.	**07**
		OR	
	(c)	Enlist the stability condition of atmosphere and explain any one type with diagram.	**07**
Q.3	**(a)**	Define the terms; 1. Wavelength 2. Sound power 3. Frequency	**03**
	(b)	Write a short note on effects of noise on Human.	**04**
	(c)	Enlist Six types of Plume behaviors & explain any three types 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)**	Discuss the need of representative sampling in air pollution monitoring.	**03**
	(b)	Explain the aesthetic, climatic, and related effects of air pollution.	**04**
	(c)	Write a short note on High Volume Air Sampler (HVAS).	**07**
		OR	
Q.4	**(a)**	Describe the episodes of London smog cause due to photochemical effect.	**03**
	(b)	Write a short note on Heat island effect.	**04**
	(c)	Explain the step by step procedure of stack monitoring.	**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 420 $\mu g/m^3$ at 25^0c and 1 atm pressure at a given location. What is the concentration of SO_2 in ppm. ?	**04**
	(c)	With reference to atmospheric photochemical reaction, explain in detail Hydrocarbon reactivity.	**07**

OR

Q.5	**(a)**	Define the Wind rose diagram & discuss its application in environmental engineering field.	**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)	Enlist the photochemical oxidants and write the reactions of their formation.	**07**

****