

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2020

Subject Code:2173515**Date:30/01/2021****Subject Name:Design Of Air Pollution Control System And Air Quality Modeling****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Write a note on Gravity settler.	03
	(b) Write main design equations of Electrostatic Precipitator and explain their significance	04
	(c) Derive performance equation (Design Equation) for gravity settling chamber.	07
Q.2	(a) Explain multiple tray settlers.	03
	(b) Write a note on Scrubber.	04
	(c) Explain various natural mechanisms for removal of gaseous component and particulate matter.	07
Q.3	(a) Explain Activated Carbon technique for SO _x removal.	03
	(b) How many type of air cyclones are there? Explain briefly each type.	04
	(c) Write a note on Seaboard process, Girbotol process, Claus process for sulphur removal during combustion.	07
Q.4	(a) Explain Jet injects Scrubber with neat diagram	03
	(b) Explain hydrodesulphurization of coal.	04
	(c) What do you understand by Dispersion Modeling? Explain in detail	07
Q.5	(a) Define: ESP, stability classes, air quality model	03
	(b) What are Atkin particles? Explain.	04
	(c) Write short notes: (i) ISCST3 (ii) CALINE4	07
Q.6	(a) Explain Plume rise, migration velocity, air pollution.	03
	(b) Explain Extraction of Sulphur from fuel. (Sweetening Process and hydrodesulphurization of Coal).	04
	(c) Explain Gaussian Plume model in detail with its limitation	07
Q.7	(a) What do you mean by Receptor Modeling?	03
	(b) Draw a figure with nomenclature and explain mechanism and working of cyclone separator.	04
	(c) Discuss “Control of oxides of Nitrogen by Modification of Operating Conditions and Modification of Design Condition”.	07
Q.8	(a) Enlist control technologies for Hydrocarbons.	03
	(b) Write short note on AERMOD	04
	(c) Explain “DCDA (Double Contact Double Absorption) Process” for production of sulphuric acid from sulphur dioxide.	07
