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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 SOx 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**

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