



VI SEMESTER B.TECH (CIVIL ENGINEERING)

MAKEUP EXAMINATIONS, MAY/JUNE 2022

SUBJECT: AIR POLLUTION AND CONTROL [CIE 4055]

REVISED CREDIT SYSTEM

( \_ / \_ / 2022)

Time: 3 Hours

Max. Marks: 50

### Instructions to Candidates:

- ❖ Answer ALL the questions
- ❖ Missing data may be suitably assumed
- ❖ Draw neat sketches wherever necessary

Q.No		Marks	CO
1A.	List the different meteorological factors influencing air pollution and explain in detail only the primary factors.	05	2
1B.	Define the terms: i) Effective stack height.                      ii) Inversion.                      iii) Aerosols.	03	1,2
1C.	What is super and sub adiabatic lapse rate?	02	2
2A.	Explain the reactions of SO <sub>2</sub> , NO <sub>2</sub> and CO involved in the atmosphere.	05	1
2B.	Explain with neat sketches any three types of plume behavior under uniform lapse rate condition.	03	2
2C.	Explain absorption in liquids of ambient air sampling.	02	3
3A.	A plant has 2, 400 megawatt units each with a 60m stack. The stack diameters are 5m. The flue gas exit velocity is 14m/s and exit temperature 145°C. Calculate plume rise and effective stack height with light wind when $dt/dz = 0.5^{\circ}\text{C}/100\text{m}$ . At the stack height, wind velocity is 4m/s and ambient air temperature 15°C	05	2
3B.	Explain ambient air sampling and laboratory analysis of SO <sub>2</sub> .	03	3
3C.	Explain with a neat sketch the construction and working of a cascade - impactor.	02	4
4A.	Explain in detail stack sampling for different cross sections along with the components of a sampling train.	05	3
4B.	Illustrate with a neat sketch the construction and working of a venture scrubber.	03	4
4C.	Write a note on pollution rose diagram.	02	5
5A.	What are the prime factors of pollutants effecting human health? Explain the forms of damage caused to leaves of plants affected by pollution.	05	4
5B.	Discuss the phenomenon and effects of atmospheric Ozone layer depletion.	03	4
5C.	Write a note on air pollution laws and legislations	02	5