BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BTECH **SEMESTER : VII**
BRANCH: CIVIL ENGINEERING **SESSION : MO/2025**

SUBJECT: CE420 AIR POLLUTION AND CONTROL

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Explain the effect of air pollution on vegetation.	[5]	CO1	K2
Q.1(b)	A sample of air analysed at 0°C and 1 atm pressure is reported to 9 ppm of CO. Determine the equivalent CO concentration in $\mu g/m^3$ and mg/m^3.	[5]	CO1	K5
Q.2(a)	Discuss the methods for the determination of air pollution indices.	[5]	CO2	K2
Q.2(b)	Discuss the NDIR technique for CO monitoring.	[5]	CO2	K2
Q.3(a)	Explain and discuss Gaussian Plume Model.	[5]	CO3	K2
Q.3(b)	Discuss the plume behavior of Trapping and Looping with the variation in ELR and ALR.	[5]	CO3	K2
Q.4(a)	Explain the principle of centrifugal collector and calculate the minimum size of the particle that will be removed with 100 percent efficiency from the gravitational settling chamber under the following conditions: Horizontal velocity of air is 1.2 m/sec and temperature is 75°C.The length and height of the chamber is 10 m and 1.5 m respectively. The viscosity of air is 2.1×10^{-5} kg/m-s.	[5]	CO4	K5
Q.4(b)	Explain the principle of Electrostatic Precipitator and find the migration velocity of existing electrostatic precipitator, in which the collection plate area is 110 m^2 and collection efficiency is 99.5%.	[5]	CO4	K5
Q.5(a)	Explain Chemiluminescence Analyzer with neat diagram.	[5]	CO5	K2
Q.5(b)	Explain Air Injection and Catalytic Converter System for controlling air pollution	[5]	CO5	K2

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