USN | | | | | | | | | |

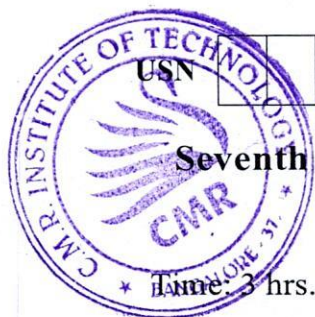### Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Air Pollution and Control

Time: 3 hrs.
Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Define air pollution. Explain primary and secondary air pollutants with examples. Also explain the sources of air pollution. **(10 Marks)**

b. Discuss the effects of air pollution on
   i) Health of human   ii) Plant   iii) Materials. **(10 Marks)**

OR

2 a. Briefly explain the types of inversions. **(10 Marks)**

b. Explain photochemical smog. What are the effects? **(10 Marks)**

Module-2

3 a. Write a note on :
   i) Lapse rate   ii) Stability   iii) Wind velocity   iv) Turbulence **(10 Marks)**

b. Determine the plume rise and effective height of stack for the following details:
   Physical stack height : 200 m ;   Inside diameter of stack at exit is 1 m
   Wind velocity 3 m/s ;   Air temperature 25°C
   Barometric pressure 1000 milibars ;   Stack gas exit velocity 12 m/s
   Stack gas exit temperature 150°C. **(10 Marks)**

OR

4 a. Explain various types of plume behaviour in difference atmosphere conditions with neat sketch. **(10 Marks)**

b. Factory uses 1.5 ML of fuel oil per month. The exhaust gases from the factory contain the following quantities pollutants per year:
   i) Particulate matter = 4 tonnes/year   ii) SO_2 = 20 tonnes/year
   iii) NO_x = 5 tonnes/year   iv) HC, CO and others = 3 tonnes/year
   Determine the safe height of the chimney. **(10 Marks)**

Module-3

5 a. Briefly explain Gaussian Plume model. **(10 Marks)**

b. Discuss the causes, sources and effects of indoor air pollution. **(10 Marks)**

OR

6 a. Briefly explain with neat sketch, gaseous sampling by sampling train. **(10 Marks)**

b. With neat sketch explain the procedure for measurement of suspended particulate in ambient air with high volume samples. **(10 Marks)**

Module-4

7 a. With the help of neat sketch explain operation of electrostatic precipitators. **(10 Marks)**

b. With neat sketch explain the working of cyclone separators. **(10 Marks)**

OR

8 a. Explain with neat sketches the principle and working of the following :
   i) Fabric filters   ii) Gravitational settling chambers.   (12 Marks)
   b. List the types of scrubbers and explain any 2 scrubbers.   (08 Marks)

Module-5

9 a. Discuss the causes, effects and control of noise pollution.   (10 Marks)
   b. Discuss on automobile exhaust emission control methods.   (10 Marks)

OR

10 a. Describe the phenomenon of Green House Effect due to carbon dioxide.   (08 Marks)
   b. Describe the phenomenon of Heat Island effect.   (08 Marks)
   c. Outline the Air Act 1981.   (04 Marks)

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