



# CBCS SCHEME

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15CV551

## Fifth Semester B.E. Degree Examination, Jan./Feb. 2021 Air Pollution and Control

Time: 3 hrs.

Max. Marks: 80

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

### Module-1

- 1 a. Write the definition of Air Pollution as per the recommendations of I.S. (02 Marks)
- b. Explain the effects of carbon monoxide and lead on human health. (06 Marks)
- c. Explain the basic theory of formation of Photochemical Smog, with the necessary reactions. (08 Marks)

OR

- 2 a. Discuss primary and secondary air pollutants with examples. (04 Marks)
- b. Briefly explain the effects of air pollutants on plants and materials. (04 Marks)
- c. What is inversion? Explain different types of inversion. (08 Marks)

### Module-2

- 3 a. Explain the Environmental Lapse Rate (ELR) and Adiabatic Lapse Rate (ALR) and their utility in understanding the different atmospheric stability conditions. (08 Marks)
- b. Explain with neat sketches, how plumes behaviour in different atmospheric stability conditions. (08 Marks)

OR

- 4 a. Write a note on Mixing depths. (04 Marks)
- b. With a neat sketch explain the importance of Windrose in the air pollution studies. (06 Marks)
- c. A boiler with a stack of 220m height of 0.42m diameter is releasing flue gas at a velocity 15.0 m/s at 170°C. Wind speed at the stack height is 6 m/s and ambient temperature is 30°C. Estimate the plume rise when the environment lapse rate is  $-2.5^{\circ}\text{C}/100\text{m}$  and  $+2.0^{\circ}\text{C}/100\text{m}$ . (06 Marks)

### Module-3

- 5 a. Write a brief procedure for pollution of suspended particulate matter using H.V.A.S. (08 Marks)
- b. Explain adsorption and absorption techniques in controlling gaseous pollutants. (08 Marks)

OR

- 6 a. Explain with a neat sketch, a typical sampling train for sampling particulate matter. (08 Marks)
- b. Give in detail method for measuring concentration of  $\text{SO}_2$  and  $\text{NO}_x$  in H.V.A.S. (08 Marks)

### Module-4

- 7 a. Explain the control of air pollutants by the use of cyclone separator control device with a neat sketch. (08 Marks)
- b. With a neat sketch, explain the principle, construction and working of fabric filter. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg.  $42+8=50$ , will be treated as malpractice.

OR

- 8 a. With a neat sketch, explain the principle and operation of an Electrostatic Precipitator. (08 Marks)  
b. List the different types of Wet Scrubbers and explain any one of them with a neat sketch. (08 Marks)

Module-5

- 9 a. Define Noise Pollution. List the sources of noise pollution. (04 Marks)  
b. Write short notes on Ozone Layer Detection. (04 Marks)  
c. Discuss the following cases of air pollution episodes:  
(i) London Killer's Smog  
(ii) Bhopal Gas Tragedy (08 Marks)

OR

- 10 a. Explain briefly the principal emission from gasoline and diesel driven vehicles. (06 Marks)  
b. Explain with a help of neat sketch the green house effect. (05 Marks)  
c. List the Indian Ambient Air Quality standards. (05 Marks)

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