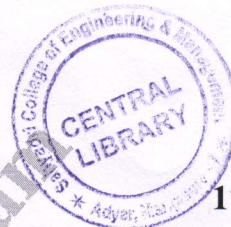


# CBCS SCHEME



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17CV/CT551

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020

## 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. Classify the Air Pollution sources adding with examples. (10 Marks)  
b. Describe the general mechanisms by which Air pollution effects the materials. (10 Marks)

OR

- 2 a. List out the types of Inversions and explain them. (10 Marks)  
b. Elaborate Photochemical Smog adding, with chemical reactions. (10 Marks)

### Module-2

- 3 a. With the aid of graphical representation, explain different types of stability conditions of atmosphere. (10 Marks)  
b. Determine the plume rise and the effective height of the stack for the following data :  
i) Physical stack height : 250m  
ii) Inside diameter of stack at exit : 1m  
iii) Wind velocity : 3m/sec  
iv) Air temperature : 25°C  
v) Barometric pressure : 1000 millibars.  
vi) Stack gas exit velocity : 10 m/sec  
vii) Stack gas exit temperature : 150°C. (10 Marks)

OR

- 4 a. A factory uses 1.5 million litres of fuel oil per month. The exhaust gases from the factory contain the following quantities of pollutants per million litres per year.  
i) Particulate matter : 4t/year      ii) SO<sub>2</sub> : 20t/year      iii) NO<sub>x</sub> : 5t/year  
iv) HC, CO and others : 3t/year.  
Determine the safe height of the chimney required for the safe dispersion of the pollutants. (10 Marks)  
b. Write a note on measurement of the meteorological variables. (10 Marks)

### Module-3

- 5 a. Explain the principles of sampling the gaseous air pollutants. (10 Marks)  
b. Give step by step flow chart for the analysis of SO<sub>x</sub> and NO<sub>x</sub>. (10 Marks)

OR

- 6 a. With the aid of neat sketch, explain High Volume Air Sampler. (10 Marks)  
b. Justify the necessity of isokinetic sampling in case of stack sampling. (10 Marks)

### Module-4

- 7 a. Give the advantages and disadvantages of Wet Scrubbers. (10 Marks)  
b. Explain the construction and working of settling chambers. (10 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.



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OR

- 8 a. Elaborate the operating problems that are encountered while normal operation of fabric filters. (10 Marks)
- b. A cement plant was emitting flue gas at the rate of  $20000\text{m}^3/\text{hr}$ . Assuming inlet gas velocity of  $2\text{m/s}$ , design a tubular ESP with  $0.20\text{m}$  diameter with 7 cylinders to achieve the efficiency of i) 90% and ii) 95%. (10 Marks)

Module-5

- 9 a. Write a note on Noise Pollution causes, effects and control. (10 Marks)
- b. Give the salient features of Environmental Protection Act, 1986. (10 Marks)

OR

- 10 a. Illustrate the case of Bhopal Gas Tragedy and its effects. (10 Marks)
- b. Distinguish between Montreal Protocol and Kyoto Protocol. (10 Marks)

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