CBCS SCHEME

USN | | | | | | | | | | 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 : 25^0C
v) Barometric pressure : 1000 millibars.
vi) Stack gas exit velocity : 10 m/sec
vii) Stack gas exit temperature : 150^0C. **(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_2 : 20t/yerar iii) NO_X : 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_X and NO_X. **(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)**

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 20000m^3/hr. Assuming inlet gas velocity of 2m/s, design a tubular ESP with 0.20m 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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