Code No: **RT41017** **R13** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February - 2019

AIR POLLUTION AND CONTROL

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
*****

PART–A *(22 Marks)*

1. a) Define Air Pollution. [3]
   b) What is a flare? Explain. [4]
   c) Explain about the plume rise models. [4]
   d) Write on the significance of ambient air quality standards. [3]
   e) What is a scrubber? Name different types of wet and dry scrubbers. [4]
   f) When to use bio filtration for air pollution control. [4]

PART–B *(3x16 = 48 Marks)*

2. a) Briefly explain primary and secondary air pollutants with an example. [8]
   b) Discuss the effects of air pollutants on human health in detail. [8]

3. a) Write briefly about air-fuel ratio, and compression ratio. [8]
   b) Write on the importance of removal of gases like SO_2, NO_2, and CO. [8]

4. a) State and discuss various meteorological factors which influence air pollution. [8]
   b) What is wind rose? Draw the diagram and explain its use. Also explain how wind rose is developed. [8]

5. a) Discuss the importance of Gaussian Model for plume dispersion. [8]
   b) Explain the methodology for stack emission monitoring for flue gases. [8]

6. a) Discuss the approach or various ways normally followed to the problem of particulate emission control. Also explain the role of control equipment. [8]
   b) Calculate the suspended particulate matter concentration in the ambient air from the following high volume air sampler data: Average pressure of the day at station level = 725 mm of Hg, Average temperature = 25^0C, Actual sampling time = 12 hrs, Sampling rate at the beginning = $4m^3$/min, Sampling rate at the end = $3.5m^3$/min, Weight of filter paper before exposure = 3.467 g, Weight of filter paper after exposure = 3.935 g. [8]

7. a) Explain the factors influencing the industrial plant location and planning. [8]
   b) Explain how do you control the emission of NO_X by the following treatment methods: (i) Absorption by H_2SO_4 (ii) Absorption by magnesium hydroxide (iii) Adsorption by solids. [8]