Model Question Paper (CBCS)

USN | | | | | | | | | | | **15CV551**

Fifth Semester B.E. Degree (CBCS) Examination

Air Pollution and Control

Time: 3hours   Max Marks: 80

Note:- Answer Any Five full questions choosing one from each module

Module -1

1   a. Define air pollution. Explain primary and secondary air pollutants   (08 marks).

     b. Explain the sources and consequence of air pollutants for the following

        (i) Sulphur-di-oxide (ii) Ozone (iii) Dust (iv) Fumes   (08 marks).

OR

2   a. Enumerate the effects of the air pollution on human health and vegetation.   (08 marks).

     b. Define inversion. Briefly explain the different types of inversion with the aid of neat sketch.

                                                                                     (06 marks)

     c. Write a short note on photo-chemical smog   (02 marks)

Module -2

3.   a. Explain the structure and the composition of atmosphere   (08 marks)

     b. With a neat sketch Explain the Plume behaviour for the different atmospheric conditions

                                                                                     (08 marks)

OR

4.   a. Explain the Gaussian plume dispersion equation for the gaseous pollutants   (06 marks)

     b. A coal fired power plant releases from the stack SPM at the rate of 2.3g/s. The stack height is
        60m while the temperature of the stack gases is $160^{0\,c}$ and the ambient air temperature is 30° C.
        the wind velocity at the stack height is 2.5m/s, while the stack gas velocity is 5.0m/s. The stack
        diameter is 3.5m. The atmosphere pressure is 1.005 bar. The wind speed at 10m height from the
        ground is 1.95 m/s. Estimate the ground level concentration for 1and 2 km downwind distance
        take the standard deviations for 1km as σ_y = 34, σ_z =14; for 2km σ_y = 63, σ_z = 22 respectively.

                                                                                     (10 marks)

Module -3

5.   a. What is meant by air sampling? Explain non-isokinetic, isokinetic sampling and sampling train

                                                                                     (08 marks)

     b. Explain any one method for measuring the concentration of the oxides of nitrogen in stack

                                                                                     (08 marks)

OR

6. a. With the help of the neat sketch explain high volume air sampler for measurement of particulate matter. (10marks)

    b. What is meant by air quality monitoring? Explain any four methods of calculation of air pollution indices for monitoring of air pollutants. (06 marks)

Module -4

7. a. Explain the factors affecting the selection of the particulate air control devices. (08 marks)

    b. Briefly explain the particulate matter removal by gravity settler with the neat sketch. (08 marks)

OR

8. a. With the neat sketch explain the working principle of Cyclone separator. (08 marks)

    b. A cement plant was emitting flue gas at the rate of 20,000m^3/h. Assuming inlet gas velocity of 2m/s, design a tubular ESP with 0.20 diameter with 7 cylinders to achieve the efficiency of a) 90% b) 95% (08marks)

Module -5

9. a. Explain briefly the emission of the gasoline driven vehicles and diesel driven vehicles (08 marks)

    b. Define Noise pollution. Explain the sources and different methods to control the noise pollution (08 marks)

OR

10. a. Enumerate the following

    i) Acid rain and it effects ii) Bhopal gas tragedy (08 marks)

    b. Write short notes on
        (i) Air quality standards
        (ii) noise pollution standards
        (iii) Environmental policy
        (iv) Kyoto Protocol (08 marks)