P-6531

[6181]-80

B.E. (Civil)

AIR POLLUTION AND CONTROL

(2019 Pattern) (Semester - VII) (401004A) (Elective - IV)

Time : 2½ Hours]   *[Max. Marks : 70*

Instructions to the candidates:

1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*

2) *Figures to the right indicates full marks.*

3) *Draw neat figures wherever necessary.*

4) *Assume suitable data, if necessary.*

5) *Use of scientific calculators is allowed.*

Q1) a) Enlist various methods of sampling particulate matter and explain any one in detail. **[6]**

b) Explain Stack monitoring in details with a neat sketch. **[5]**

c) Convert 80 µg/m³ of SO_2 in ppm. Assume temperature 25°C and pressure at 103.193 kPa. **[6]**

OR

Q2) a) Write in a tabular form National ambient air quality standard (NAAQS) specified by central pollution control board (CPCB) for PM_{10} and $PM_{2.5}$ (Annual and 24 hours for industrial, Residential, Rural and other area). **[6]**

b) Explain the purpose of ambient air sampling. **[5]**

c) Write a short note on High volume sampler with sketch. **[6]**

Q3) a) State the Basic equation of Emission estimation. **[6]**

b) Explain types of air quality models. **[5]**

c) Define emission inventory and enlist the types. **[6]**

OR

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Q4) a) Write a short note on air quality modelling. **[6]**

b) Explain Emission inventory framework developed by CPCB. **[5]**

c) Deliberate the strengths and limitations of AERMOD model USEPA.p

[6]

Q5) a) Calculate the minimum size of the particle that will be removed with 100% efficiency from a settling chamber for the following data :

i) Horizontal velocity - 0.25 m/s

ii) Particle Density - 2500 kg/m^3

iii) Chamber : Length - 7.5 m, height - 1.5 m

iv) Viscosity of air -1.9 × 10^{-5} kg/ms.

v) Gas Density - 1.0888 kg/m^3

The settling chamber will be operated under quiescent conditions. **[8]**

b) Write a note on electrostatic precipitator on Mechanism, working principle & applications. **[5]**

c) Explain the measures for controlling the emission from mobile sources.

[5]

OR

Q6) a) State the working principle, advantages and disadvantages of fabric filter as a particulate control equipment. **[5]**

b) Design a parallel type ESP with 10 channels to handle 12000 m^3/hour of gas for efficiency of 95%. **[8]**

Assume :

i) Velocity of particle = 0.1 m/s

ii) Height of plate = 2.0 m

iii) Spacing between plate = 0.15 m

c) What is carbon sequestration? Enlist the types, explain any one. **[5]**

Q7) a) Enlist methods for odour pollution control. Explain any one in detail. **[6]**

b) Explain sick building syndrome with causes and its preventive measures. **[6]**

c) What is active and passive sampler? Explain with advantages and disadvantages. **[6]**

OR

Q8) a) What are the causes and effects of indoor air pollution? **[6]**

b) What are the sources of air pollutants? **[6]**

c) Explain use of plants for indoor air quality improvement. **[6]**

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