

Total No. of Questions : 8]

SEAT No. :

P538

[Total No. of Pages : 2

[6004]-460

B.E. (Civil)

AIR POLLUTION AND CONTROL

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

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 side indicate full marks.
- 3) Draw neat figures wherever necessary.
- 4) Assume suitable data if necessary.
- 5) Use of scientific calculators is allowed.

- Q1)** a) Explain the purpose of ambient air and stack gas sampling. [6]
b) Convert $100 \mu\text{g}/\text{m}^3$ of SO_2 in ppm. Assume temperature 25°C and pressure at 103.193 kPa. [6]
c) List the devices and methods used for air pollutant sampling. [6]

OR

- Q2)** a) Explain with a neat sketch location of sampling ports and traverse points in case of stack sampling. [6]
b) Convert $140 \mu\text{g}/\text{m}^3$ of SO_2 in ppm. Assume temperature 25°C and pressure at 103.193 kPa. [6]
c) Explain with a neat sketch working of high volume sampler. [6]

- Q3)** a) Define emission factor and relate its significance in preparation of emission inventory. [6]
b) Describe the steps involved in preparation of gridded emission inventory. [6]
c) Compare the physical, statistical and deterministic air quality models. [5]

OR

- Q4)** a) Enumerate and discuss the basic components and importance of air quality modelling. [6]
b) State the basic equation of emission estimation and describe its terminologies. [6]
c) Explain activity data in emission estimation with examples. [5]

P.T.O.

- Q5)** a) Describe the control of air pollution at source by process modification, change of raw material and equipment modification. [6]
- b) Determine the migration velocity for an existing ESP having collection plate area of 110 m², gas flow rate 2.5 m³/s and collection efficiency 99.5%. [6]
- c) Explain the measures to be taken to control gaseous air pollutants. [6]

OR

- Q6)** a) State and explain the carbon sequestration. [6]
- b) Find the collecting plate area and number of plates to be used in a horizontal flow single stage Electrostatic precipitator handling an average gas flow of 2.5 m³/s from a pulverized coal fired boiler. Consider the plate of 4 m wide and 5.2 m high. The required collection efficiency of ESP is 98%. Take the drift velocity as 12 cm/s. [6]
- c) Describe the factors responsible for selection of particulate control equipment. [6]
- Q7)** a) Relate improved ventilation to indoor air quality. [5]
- b) Describe the use of plants for control of indoor air pollution. [6]
- c) Discuss the causes and mitigation technologies for indoor air pollution. [6]

OR

- Q8)** a) Explain sick building syndrome and its solution. [5]
- b) Explain the radon removal technique. [6]
- c) Enumerate the odorous materials with respect to following industries. [6]
- i) Petroleum
 - ii) Pharmaceutical
 - iii) Paper and Pulp

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