

Liby  
10/12/08

MASTER

- N.B. : (1) Question No. 1 is compulsory.  
 (2) Write any four questions from remaining six questions.

1. (a) What is plume rise ? Explain the role of thermal buoyancy and momentum in the plume rise. How will you calculate plume rise in each case ? 10
- (b) Develop a Gaussian Dispersion model for the prediction of concentration of gaseous air pollutants from a point source. How can it be modified for a particulate matter ? 10
2. (a) What is iso-kinetic sampling ? How is it achieved ? Explain the step by step procedure to compute the concentration of Suspended Particulate Matter (SPM) in stack monitoring. 10
- (b) Explain the principle of generation of corona in an Electro Static Precipitator (ESP). Derive the relationship for collection efficiency on ESP assuming turbulent flow. 10
3. (a) List out various ambient air quality and noise pollution (both ambient and industrial) standards. 20
- (b) What are effects of air pollutants on the plants ?
- (c) Describe four major layers of the earth's atmosphere.
- (d) What is Photochemical Fog, how is it formed ? What are the problems it creates ?
4. (a) Explain the automobile air pollution, its control, effects. 6
- (b) What are various types of collection equipment for PM ? Compare all the control devices on particle size, collection efficiency, cost of construction, operation and maintenance. Write the design parameters for all. 8
- (c) Explain two meteorological parameters that affect the behaviour of air pollution. 6
5. (a) What is inversion ? How do these affect the dispersion of plumes ? 8
- (b) Draw and explain carbon cycle in nature. 6
- (c) Give emission standards prescribed by the CPCB for various air pollutants. 6
6. (a) What is the Socio-economic effect of air pollution from the urban areas ? Explain. 4
- (b) Explain "Wind Rose" diagrams. What are "Pollution Roses" ? 6
- (c) Explain the working of push-pull and lip hood systems with help of neat sketches. What is meant by length of throw ? How push and pull blower ratings are interdependent ? 10
7. Write short notes on any four :- 20
  - (a) Heat islands
  - (b) Incinerators
  - (c) Bhopal gas tragedy
  - (d) Bag house filter
  - (e) Emission factors
  - (f) Ozone depletion.