

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V • EXAMINATION – WINTER • 2014****Subject Code: 153504****Date: 03-12-2014****Subject Name: Air Pollution Control****Time: 10.30 am - 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 (a) What is the working principle of Electrostatic precipitator (ESP)? What are the types of ESPs used in industries? **07**

(b) What is the working principle of Fabric filter? Explain with the help of suitable diagram. **07**

Q.2 (a) What do you mean by noise? How it can be measured? What are the impacts of noise? **07**

(b) Following atmospheric altitude versus temperature data has been collected at a place: **07**

Altitude (m)	0	100	200	300	400	500	600
Temperature (°C)	21	19	17	15	16	17	18

What would be the MMD?

OR

(b) If following atmospheric condition exists in atmosphere, How high would you expect a plume to rise if it emitted at 24°C from a 100 m stack at DALR. **07**

Altitude (m)	0	100	200	300	400	500	600
Temperature (°C)	23	21	19	17	18	19	20

Q.3 (a) Write a short note on following: **07**

- Wind velocity and thermal turbulence.
- Mountain-valley effect on pollutant dispersion.

(b) What do you understand by dispersion modeling? Give a brief classification of various kinds of models. **07**

OR

Q.3 (a) Write a short note on following: **07**

- Wind velocity and mechanical turbulence
- Land & sea breeze effect on pollutant dispersion.

(b) Explain the Gaussian model with its assumptions and limitations in detail. What are the modifications done in the original equation? **07**

Q.4 (a) Discuss “The Air (Prevention and Control of Pollution) Act, 1981” in brief. **07**

(b) What do you mean by inversion? What are the major types of inversion? Explain Subsidence inversion with suitable diagram. **07**

OR

Q.4 (a) Discuss Constitution of control boards and powers conferred to control boards under “The Air (Prevention and Control of Pollution) Act, 1981”. **07**

(b) Explain radiation inversion and advective inversion with suitable diagram. **07**

Q.5 (a) What do you mean by ventilation coefficient? How is it related with MMD? What do you understand by stack effective height? How does it relate with plume rise. **07**

(b) What do understand by lapse rate? Derive an expression for dry adiabatic lapse rate. **07**

OR

- Q.5** **(a)** What do you mean by air pollution? Write about sources and health impacts associated with oxides of sulphur and nitrogen. **07**
- (b)** What are the major air pollutants emerging from coal based power plant and from fertilizer industry? **07**
