Sub Code: RCE077

Paper Id: 100747 Roll No:

B. TECH.
(SEM VII) THEORY EXAMINATION 2019-20
AIR AND NOISE POLLUTION CONTROL

Time: 3 Hours *Total Marks: 70*

Note: 1. Attempt all Sections. If required any missing data, then choose suitably.

SECTION A

1. Attempt all questions in brief. **2 x 7 = 14**

a.	What is stack plume?
b.	What is the difference between adsorption and absorption?
c.	Describe indoor air pollution. Name any four indoor air pollutants.
d.	Define Lapse rate, DALR and ELR.
e.	What do you mean by the term acoustic?
f.	What are the different layers of the atmosphere?
g.	Name some of the special noise environment.

SECTION B

2. Attempt any *three* of the following: **7 x 3 = 21**

a.	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 1600°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 $\sigma_y = 34$, $\sigma_z = 14$; for 2km $\sigma_y = 63$, $\sigma_z = 22$ respectively.
b.	Explain the electrostatic precipitator (ESP) in detail.
c.	Write a short note on photo-chemical smog. Also describe the reactions involved in the process.
d.	What are the effects of the noise pollution on health?
e.	Describe the catalytic convertor. Also, explain how it can be used to reduce the automobile emissions with the help of reactions?

SECTION C

3. Attempt any *one* part of the following: **7 x 1 = 7**

(a)	Describe the principle of operation, advantages and limitations of Fabric filter for particulate contaminants.
(b)	Describe the principle of operation, advantages and limitations of Gravitational settling chamber for particulate contaminants.

4. Attempt any *one* part of the following: **7 x 1 = 7**

(a)	Describe various types of pollutants emitted from petrol-driven and diesel-driven motor vehicles. Also write Euro-1, Euro-II and Euro-III specifications for pollution control in petrol driven passenger cars.
(b)	What are the approaches for controlling the oxides of nitrogen in combustion gases? Discuss the control methodology of oxides of nitrogen by combustion modification.

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5. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Enumerate the effects of the air pollution on humans, animals, property and plants.
(b)	Explain primary and secondary air pollutants. Explain the sources and consequence of air pollutants for the following: (i) Sulphur-di-oxide (ii) Ozone(iii) Dust (iv) Fumes

6. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Explain in detail the outdoor noise propagation and indoor noise propagation in relation with noise pollution and control.
(b)	Explain the concept of equivalent continuous energy level(L_{eq}).

7. Attempt any *one* part of the following: 7 x 1 = 7

(a)	Briefly discuss the Absorption sampling collection techniques and sampling devices for gaseous air pollutants.
(b)	Briefly discuss the Adsorption sampling collection techniques and sampling devices for gaseous air pollutants.