

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2022****Subject Code:3151309****Date:09-01-2023****Subject Name:Fundamentals of Air Pollution****Time:10:30 AM TO 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.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

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|------------|-----|---|-----------|
| Q.1 | (a) | Enlist the different types of fuels used in vehicles also enlist the air pollutants emitted by each type of fuel. | 03 |
| | (b) | Define Air Pollutants. Enlist various sources of Air pollutants. Explain the classification of Air Pollutants. | 04 |
| | (c) | Write a detailed note on “Procedure for stack gases Sampling.” | 07 |
| Q.2 | (a) | Give the difference between Dry adiabatic and wet adiabatic lapse rate. | 03 |
| | (b) | Define inversion. Give at least three differences between radiation Inversion and subsidence inversion. | 04 |
| | (c) | Discuss the Effects of Carbon Monoxide on Plants, Vegetation and Human health. | 07 |
| OR | | | |
| | (c) | Describe the effects of Sulfur dioxide on human health, vegetation & materials. | 07 |
| Q.3 | (a) | Enlist the four factors responsible for formation of photochemical Smog. | 03 |
| | (b) | Enlist the meteorological factors influencing the air pollution and explain any one in brief. | 04 |
| | (c) | Give classification of plume behavior. Show their temperature, velocity profile along with the plume shape. | 07 |
| OR | | | |
| Q.3 | (a) | Write a short note on heat island effect. | 03 |
| | (b) | Derive the equation of DALR ($-dT/dz = 9.8^{\circ} \text{C/km}$). | 04 |
| | (c) | Explain Wind rose diagram and enlist its application. | 07 |
| Q.4 | (a) | Explain Photo chemical smog in brief. | 03 |
| | (b) | Which pollutants are measures from the stack? Enlist those pollutants with its permissible limits. | 04 |
| | (c) | Explain in brief: Construction and Working of a High Volume Sampler | 07 |
| OR | | | |
| Q.4 | (a) | Differentiate between sound and noise. | 03 |
| | (b) | Explain the effects of Noise on Human health. | 04 |
| | (c) | What do you mean by the term MMD? Explain in brief radiosonde measurements. | 07 |

- Q.5** (a) The exhaust gas from an automobile contains 1.5 percent by volume of carbon monoxide. What is the concentration of CO in milligrams per cubic meter (mg/m^3) at 25°C and 1 atm pressure? **03**
- (b) Explain the Role of oxides of nitrogen in photo oxidation. **04**
- (c) Explain the methods used for the control of Noise pollution. **07**
- OR**
- Q.5** (a) If, Sound power from a tool is 0.0015watt, then what is sound power level? **03**
- (b) State eight characteristics of odor. **04**
- (c) Enlist the methods to eliminate the odors and explain any three methods in brief. **07**
