

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VI (New) EXAMINATION – WINTER 2019****Subject Code: 2161302****Date: 04/12/2019****Subject Name: Fundamentals of Air Pollution****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

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

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|---|--------------|
| Q.1 (a) Classify air pollutants into different categories and indicate their sources. | 03 |
| (b) What are the important factors which contribute to air pollution? | 04 |
| (c) Explain the effects of NO _x on Environment. | 07 |
| Q.2 (a) Define :
1. Traverse points 2. Isokinetic condition 3. Representative sample. | 03 |
| (b) Differentiate between stack standards and ambient standards. | 04 |
| (c) Explain the guidelines for sampling and analysis of SO ₂ in ambient air with the help of flow chart. | 07 |
| OR | |
| (c) Explain the procedure of the particulate matter sampling from stack with diagram. | 07 |
| Q.3 (a) Differentiate between fumigation and lofting. | 03 |
| (b) Write a short note on MMD. | 04 |
| (c) Derive the equation of DALR ($-dT/dz$) = 9.8 ° C. | 07 |
| OR | |
| Q.3 (a) Differentiate between Super adiabatic and sub adiabatic condition. | 03 |
| (b) Write a short note on Wind velocity profile. | 04 |
| (c) Enlist the factors affecting the dispersion of pollutants in the atmosphere?
Note down the advantages and disadvantages of Gaussian Model. | 07 |
| Q.4 (a) Define following terms:
1. Convective Turbulence 2. Downwind 3. Dispersion | 03 |
| (b) Briefly explain applications of windrose diagram. | 04 |
| (c) Find out the flow of flue gas and particulate matter concentration in mg/Nm ³ . Type of fuel is lignite (Mata no madh), fuel consumption is 5 T/day. Assume suitable data. | 07 |
| OR | |
| Q.4 (a) Define following terms:
1. Mechanical Turbulence 2. Sea breeze 3. Trapping | 03 |
| (b) Differentiate between Subsidence and Radiation inversion. | 04 |
| (c) The result of stack monitoring report for the thermal power plant are as shown below: | 07 |

Stack No.	SO ₂ Concentration	NO ₂ Concentration
1	200	2
2	400	1.5
3	600	1.2
4	700	3.5
Stack limit	100 ppm	50 ppm

Determine whether an emission exceeds the limits specified by pollution control authority. If yes by how much percent?

- Q.5** (a) Express $30\mu\text{g}/\text{m}^3$ and $1.5\mu\text{g}/\text{m}^3$ of SO_2 in ppm. **03**
(b) How to reduce the odor from the point sources? Explain any one method in detail. **04**
(c) Write a short note on characteristics of sound. **07**

OR

- Q.5** (a) A diesel vehicle emits 4% carbon monoxide by volume. Determine its concentration in g/m^3 at 25°C and 1 atmosphere pressure. **03**
(b) What is decibel? Explain in detail. Why it is used? **04**
(c) Define odour and explain sources of odour. **07**
