

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2023****Subject Code:3161308****Date:12-07-2023****Subject Name:Air Pollution Control and Management****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.

- Q.1** (a) Define air pollution index. What are the uses of air pollution indices? **03**
(b) Discuss in Detail “Air Pollution Control Management”. **04**
(c) Enlist and explain the selection criteria for the Air pollution control equipment. **07**

- Q.2** (a) What are the sources of Volatile Organic compounds? **03**
(b) Enlist control techniques of VOC & explain any one in detail. **04**
(c) Write short notes on Cyclone separator with their principal, construction and working. **07**

OR

- (c) Briefly explain the working principle of gravity settling chamber along with sketch. **07**

- Q.3** (a) Explain catalytic convertor in detail. **03**
(b) Enlist and explain the advantages and disadvantages of ESP. **04**
(c) Explain working principle of Electrostatic precipitator with neat sketch. **07**

OR

- Q.3** (a) Define the following terms: (i) Stoichiometric Air-Fuel Ratio. (ii) Lean mixture (iii) Rich Mixture. **03**
(b) What are the factors affecting the efficiency of fabric filters? **04**
(c) Enlist the cleaning mechanisms of bag filter and explain each in detail with diagram. **07**

- Q.4** (a) What are the objective to the lime scrubbing throwaway process for removing SO₂ from Stack gases? **03**
(b) Differentiate between dual alkali scrubbing and single alkali scrubbing. **04**
(c) Write a short note on wet limestone scrubbing modified with Magnesium sulfate scrubbing with neat sketch and state its objectives. **07**

OR

- Q.4** (a) Why is the removal of NO_x from flue gas a formidable task? **03**
(b) What are the factors that control the formation of NO_x in combustion processes? **04**
(c) What are the combustion control methods that can be employed to reduce the emission of the oxides of nitrogen? **07**

- Q.5** (a) Enlist the various methods for control of automobile air pollution. **03**
(b) Write a short note on Turbojet Engine with diagram. **04**
(c) Identify the sources of pollution emission and suggest appropriate air pollution control scheme for cement industry. **07**

OR

- Q.5**
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| (a) | Enlist the different adsorbents used for controlling air pollution. | 03 |
| (b) | How engine design changes to reduce automobile pollution. | 04 |
| (c) | Identify the sources of pollution emission and suggest appropriate air pollution control scheme for thermal power plant. | 07 |
