**PVP 20**

Code: 20CE2501A

**III B.Tech - I Semester – Regular Examinations - DECEMBER 2022**

# AIR POLLUTION AND CONTROL

**(Common to ALL Branches)**

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level CO – Course Outcome

| | | | BL | CO | Max. Marks |
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| **UNIT-I** | | | | | |
| 1 | a) | Classify air pollutants on the basis of their source of generation, and give examples for the same. | L2 | CO1 | 7 M |
| | b) | Examine the effects of air pollution on materials and monuments. | L4 | CO1 | 7 M |
| **OR** | | | | | |
| 2 | a) | Explain the scope and significance of studying air pollution. | L2 | CO1 | 7 M |
| | b) | Inspect the causes, effects, and control measures of acid rain. | L4 | CO1 | 7 M |
| **UNIT-II** | | | | | |
| 3 | a) | Construct a wind-rose diagram, and its types. | L3 | CO2 | 7 M |
| | b) | Examine the impact of wind speed and direction in air plume dispersions with neat figures. | L4 | CO2 | 7 M |

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| | | **OR** | | | |
| 4 | a) | Make use of a neat sketch to explain the Gaussian plume model and identify its assumptions and applications. | L3 | CO2 | 7 M |
| | b) | Examine the impact of moisture and relative humidity in the dispersion of air pollutants. | L4 | CO2 | 7 M |
| | | **UNIT-III** | | | |
| 5 | a) | Explain the ‘grab sampling’ method for the collection of gaseous air pollutants. | L2 | CO3 | 7 M |
| | b) | Examine the various methods used for the analysis of Sulphur Dioxide with figure High Volume Air Sampler. | L4 | CO3 | 7 M |
| | | **OR** | | | |
| 6 | a) | Summarize the air quality emission standards for key pollutants. | L2 | CO3 | 7 M |
| | b) | List out all the parameters and pollutants that can be measured and analyzed using stack sampling. | L4 | CO3 | 7 M |
| | | **UNIT-IV** | | | |
| 7 | a) | Explain the principle and working of an electrostatic precipitator, with the help of a diagram. | L2 | CO4 | 7 M |
| | b) | Distinguish between the working principles of settling chambers and scrubbers in the removal of particulate pollutants. | L4 | CO4 | 7 M |
| | | **OR** | | | |

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| 8 | a) | Explain the principle and working of fabric filters for the control of particulate matter, with the help of a diagram. | L2 | CO4 | 7 M |
| | b) | Distinguish between the methods adopted by inertial separators and wet scrubbers in removing particulate matter from polluted air. | L4 | CO4 | 7 M |
| **UNIT-V** | | | | | |
| 9 | a) | Illustrate the working and applications of an activated carbon adsorber for the control of gaseous pollutants (Adsorption Method). | L2 | CO5 | 7 M |
| | b) | Examine how the direct flare combustion method works for the control of gaseous pollutants. | L2 | CO5 | 7 M |
| **OR** | | | | | |
| 10 | a) | Explain any two methods in which $NO_x$ gases are controlled? | L2 | CO5 | 7 M |
| | b) | Analyze the closed collections and recovery systems for the control of $SO_2$ gases. | L2 | CO5 | 7 M |