

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII • EXAMINATION – SUMMER • 2014

Subject Code: 171302**Date: 03-06-2014****Subject Name: Air Pollution Control and Management****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

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

- Q.1** (a) Write a short note: Air pollution indices **07**
(b) What do you mean by NAAQS? Explain objectives of NAAQS. **07**
- Q.2** (a) Enlist the pollutants emitted from a diesel engine. What sort of modifications you suggest to control the pollutants? **07**
(b) A packed absorption tower is designed to remove SO_2 from a coke oven stack. The stack gas flow rate measured at 1 atm and 30°C is $10\text{ m}^3/\text{s}$, and the SO_2 content is 3.0%. Using an initially pure water, 90% removal is desired. The equilibrium curve of SO_2 in water may be approximated by $y_i = 30x_i$. Determine the water requirement if 150% of the minimum flow rate is deemed adequate. **07**
- OR**
- (b) Draw a neat sketch of gas turbine combustion chamber. Explain ways of reducing emissions of carbon monoxide and hydrocarbon **07**
- Q.3** (a) Explain in brief acid rain and show through series of reactions formation of acids in atmosphere. **07**
(b) Summarize all pertinent photochemical reactions. **07**
- OR**
- Q.3** (a) With the help of graphical representation, explain the effects of air-fuel ratio on hydrocarbon, carbon monoxide, and nitric oxide exhaust emissions. **07**
(b) Write a short note: Photochemical smog **07**
- Q.4** (a) With a neat sketch explain activated carbon adsorption for cleaning dirty gas. **07**
(b) Enlist the potential methods of reducing sulfur dioxide. Explain any one in detail. **07**
- OR**
- Q.4** (a) Explain in detail: Incineration of gaseous wastes. **07**
(b) Enlist the advantages and disadvantages of Baghouse filters. **07**
- Q.5** (a) Explain principle, construction and working of a Cyclone Separator. **07**
(b) Explain combustion control methods for NO_x from stationary sources. **07**
- OR**
- Q.5** (a) Write a short note: Particulate control mechanisms **07**
(b) Write a short note: Flue gas desulfurization. **07**
