

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2017****Subject Code: 2171302****Date: 02/11/2017****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.

- Q.1** (a) Construct the cyclone separator with help of its components. **03**  
(b) Explain the working principle of Gravity settling chamber with neat sketch. **04**  
(c) Enlist the cleaning mechanisms of bag filter and explain each in detail with diagram. **07**

- Q.2** (a) Define Following terms: **03**  
(i) Resistivity (ii) Pressure Drop (iii) Viscosity  
(b) How to maintain the negative pressure in air pollution control System? **04**  
(c) Identify the sources and explain suitable air pollution control system for Thermal Power Plant. **07**

**OR**

- (c) Identify the sources and explain suitable air pollution control system for cement Industries. **07**

- Q.3** (a) Classify the SO<sub>x</sub> Control methods. **03**  
(b) Differentiate between single and double alkali scrubbing. **04**  
(c) Explain the magnesium oxide process for control of Sulfur dioxide with its reaction chemistry. **07**

**OR**

- Q.3** (a) Enlist and explain the three opportunities for formation of NO<sub>x</sub>. **03**  
(b) Enlist the Control methods of NO<sub>x</sub> to reducing the peak temperature and explain anyone in detail. **04**  
(c) Write a short note on selective catalytic reduction with its reaction chemistry and neat sketch. **07**

- Q.4** (a) Highlight the importance of the Tall stack dispersion **03**  
(b) Write a short note on hydrocarbon reactivity. **04**  
(c) Explain working principle of Electrostatic precipitator with neat sketch. **07**

**OR**

- Q.4** (a) Write down the working of conventional internal combustion engine. **03**  
(b) Write a note on Crankcase and evaporative emissions. **04**  
(c) Enlist and explain methods of control of vehicular emissions. **07**

- Q.5** (a) Define A/F ratio in gasoline engine and also identify the origin **03**

of exhaust emissions from gasoline engine.

(b) Give the difference between:

(i) Internal Combustion Engine and External Combustion Engine

(ii) Two Stroke Engine and Four Stroke Engine

(c) Write a brief note on Rotary combustion engine with neat sketch. **07**

**OR**

**Q.5** (a) Which scrubber is efficiently removing the particulate matter? **03**

Draw a neat sketch of that scrubber.

(b) What are the sources of Volatile Organic compounds? **04**

(c) Describe the performance parameters of Electrostatic precipitator and explain each in detail. **07**

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