

GUJARAT TECHNOLOGICAL UNIVERSITYM. E. IST Semester–Remedial Examination – July- 2011**Subject code: 711801****Subject Name: Air Pollution Control and Management****Date:07/07/2011****Time: 10:30 am – 01:00 pm****Total Marks: 60****Instructions:**

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

- Q.1** (a) Describe stability condition of the atmosphere. **06**
 (b) What is Lapse Rate? Derive $dt/dz = -1\text{ }^{\circ}\text{C}/100\text{ meter}$. **06**
- Q.2** (a) Discuss meteorological parameter in detail. **06**
 (b) Explain with diagram the types of plume behavior. **06**
- OR**
- (b) Discuss point source and line source in detail. **06**
- Q.3** (a) Explain wind rose diagram. How to construct wind rose diagram? **06**
 (b) Explain stack monitoring kit. **06**
- OR**
- Q.3** (a) Write note on different adsorbent materials in adsorbers. **06**
 (b) Explain factors affecting adsorption performance. **06**
- Q.4** (a) Explain combustion control method for NO_x control. **06**
 (b) Explain lime scrubbing system for SO₂ removal. **06**
- OR**
- Q.4** (a) Describe essential components of electrostatic precipitator **06**
 (b) Explain multicyclone separator with design criteria **06**
- Q.5** (a) Explain in details the factor affecting the selection of particulate control equipment. **06**
 (b) Explain control methods for Volatile Organic Compounds. **06**
- OR**
- Q.5** (a) Design a cyclone separator of maximum particles collection efficiency for 10000 cu.m/hour gas stream at 100 °C. Consider the gas to be air, releasing 400 g/s of dust. The dust mean diameter 25 μm and Pp (density of particles) is 1400 kg/m³. Estimate the pressure drop and collection efficiency for particle size 20.0 μm. **06**
 (b) Explain sequential timer, Air lock rotary valve and solenoid valve in pulse jet type bag filter. Describe types of bag cleaning mechanisms i.e. Shake/deflate, reverse air, pulse jet and sonic horns with schematics. **06**
