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GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-VIII EXAMINATION – WINTER 2015

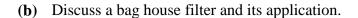
Date: 12/12/2015 Subject Code: 180608 **Subject Name: Air Pollution Control** Time: 2:30pm to 5:00pm **Total Marks: 70 Instructions:** 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. **Q.1** (a) Discuss the sources and classifications of air pollutants. 07 (b) Discuss various effects of Air Pollutants on human being. 07 **Q.2** (a) Discuss "London smog". How did it occur? What were it effects? 07 **(b)** Discuss "Global Warming", its causes and effects. **07** OR (b) Discuss the effects of different air pollutants on properties, art treasures and 07 materials. (a) Discuss in details, "Ozone Depletion". 07 0.3 **(b)** What is Adiabatic lapse rate? Describe different atmospheric conditions. 07 OR 0.3 (a) Discuss emission of gases from an automobile. What is the significance of a 07 catalytic converter in an automobile? (b) What are the alternative fuels for an automobile? Justify their use as a solution 07 to control the problem of auto-exhaust gases. (a) Discuss, Acid Rain, Heat Island effects and Dust Dome Effects. 07 **Q.4 (b)** Discuss different aspects of stake monitoring. 07 OR Sketch and discuss, different types of Wet Scrubbers used to remove 0.4 **07** particulate from a gas stream **(b)** Sketch and explain construction and operation of a cyclone collector. **07**

(a) Sketch and explain the principle, construction and working of a gravitational

Q.5

settling chamber.

07



07

A fabric filter is to be constructed using bags of 0.25 m in diameter and 6.00 m long. The air flow is 12.00 m 3 /s and the filtering velocity is 3.0m/min. Determine the number of bags required for a continuous cleaned operation.

OR

Q.5 (a) Calculate effective height of a stack for following data:

07

- > Physical height of stack = 180m
- \triangleright Inside diameter of stack = 1.2m
- ➤ Wind velocity = 2.80m/s
- \rightarrow Air temperature = 30° C
- ➤ Barometric Pressure = 1000 millibars
- \triangleright Stack gas velocity = 9.2 m/s
- > Stack gas temperature = 152° C.
- (b) Sketch and explain working and use of a ESP as particle removal device from the gas stream.
