Seat No.:	Enrolment No.

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (OLD) - EXAMINATION - SUMMER 2017 Date: 27/04/2017 Subject Code: 162203 **Subject Name: Sub-Surface Environment** 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. (a) Describe the physiological properties of various gases in mines. 0.1 07 What is air-mine pollution? Explain. 07 **(b)** (a) What is geothermic gradient? How rock temperature affects the environment in **07** 0.2 mines? **(b)** What is humidity? How humidity is controlled in mines? **07 (b)** What is the effect of mine environment on metabolism and respiration? 07 (a) What is ventilation? Explain various standards of ventilation. **07** Q.3**(b)** How air flow ducts are designed? What are the obstructions in air flow? 07 OR Describe the Atkinson's equation for mine ventilation. 07 0.3 (a) Explain the thermodynamics of ventilation. 07 **(b) Q.4** (a) What is the role of mine fan? Explain its construction, types and working. 07 What is the role of auxiliary and booster fans in mines. **(b) 07** (a) Explain he parallel and series operation of fans. 07 0.4 **(b)** Describe the ventilation system in mines. 07 Q.5 Write note on ant two: 1. Homotropal and Antitropal ventilation.

- 2. Pressure ventilation survey.
- 3. Design of evasee.
- 4. Kata thermometer.

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