

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- VI<sup>th</sup> SEMESTER-EXAMINATION – MAY- 2012****Subject code: 162203****Date: 15/05/2012****Subject Name: Sub-surface Environment****Time: 10:30 am – 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) What is firedamp? What are the occurrences of firedamp in different mines? Add a note on the causes of production of whitedamp. **07**
- (b) What is relative humidity? Add a note on instruments used for measuring relative humidity of mine air. **07**
- Q.2** (a) Explain air-conditioning in deep coal mines. **07**
- (b) Give the measurement of air flow through mine openings. **07**
- OR**
- (b) Explain the blackdamps and stinkdamps. **07**
- Q.3** (a) Explain the sources of heat in mine air due to auto-compression. **07**
- (b) Write a note on resistance of leaky airways. **07**
- OR**
- Q.3** (a) What are the causes of natural ventilation? **07**
- (b) What is refrigeration of mine air? Add a note on the refrigerant circulation system. **07**
- Q.4** (a) Give the various devices used for distribution and control of air in a mine. **07**
- (b) What are air locks? Give the suitable airlock designs. **07**
- OR**
- Q.4** (a) What are characteristic curves? Explain mine characteristic curves. **07**
- (b) Write a note on Booster and Auxiliary fans. **07**
- Q.5** (a) Explain surface Vs. underground installation of main mine fans. **07**
- (b) What are the scope and importance of ventilation surveys? Add a note on venture meter. **07**
- OR**
- Q.5** (a) Explain the pressure ventilation survey. **07**
- (b) Which steps should be taken due to gas accumulation in a large cavity? Add a note on compressed air-jets. **07**

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