Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER – VI EXAMINATION – WINTER 2015

Subject Code:162203 **Date:08/12/ 2015**

Subject Name: Sub-Surface Environment

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)**	What is the atmosphere in underground Mine? What are different air-mine gases and write about toxicity of these gases.	**07**
	(b)	How mine gases can be detected? Describe the chemical and physiological properties of various mine gases.	**07**
Q.2	**(a)**	What is the effect of humidity in mine and how is it determined?	**07**
	(b)	Explain the air-conditioning in deep mines.	**07**
		OR	
	(b)	What is firedamp? Describe the occurrence of firedamp in mines.	**07**
Q.3	**(a)**	Explain the sources of heat in mine air.	**07**
	(b)	Explain the devices used for control and distribution of air in mine.	**07**
		OR	
Q.3	**(a)**	Explain the law of ventilation in mine. Also explain Atkinson's and Chezy's equation.	**07**
	(b)	How thermodynamics of ventilation works in mine? Explain the P-V diagram.	**07**
Q.4	**(a)**	Describe surface and sub-surface installation of main mine fans	**07**
	(b)	What is the requirement of pressure survey in a mine? Explain the inclines monometer for the pressure ventilation survey.	**07**
		OR	
Q.4	**(a)**	Describe accessional and declensional ventilation with diagram. Explain Air crossings.	**07**
	(b)	How fans are installed in mines? Explain parallel and series operations of fans.	**07**
Q.5	**(a)**	Write a note on Network problems of fans.	**07**
	(b)	Write a note on Booster and auxiliary fans.	**07**
		OR	
	(a)	Write a note on Ventilation of dead ends.	**07**
	(b)	Write a note on Metabolism and respiration in mine.	**07**

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