Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – SUMMER 2013

Subject Code: 162203 **Date: 28-05-2013**

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)**	List out the noxious and poisonous gases met with a mine. Explain physiological character and Origin of firedamp.	**07**
	(b)	Explain detection method of carbon monoxide and any two detectors of carbon monoxide.	**07**
Q.2	**(a)**	Describe "Kata thermometer for the assessment of comfort conditions in mines.	**07**
	(b)	Explain methane drainage with neat sketch.	**07**
		OR	
	(b)	What is natural ventilation? Explain geothermic gradient with suitable example.	**07**
Q.3	**(a)**	What is relative humidity? Explain the Hygrometer to determine relative humidity of air.	**07**
	(b)	What is Fan ventilation? Compare – Air screw Fan and Centrifugal Fan.	**07**
		OR	
Q.3	**(a)**	What are the characteristic curves? Explain "Fan characteristic curves".	**07**
	(b)	Which are the necessities for the mine ventilations? Add a note on Sources of Leakage of air.	**07**
Q.4	**(a)**	How is natural ventilating pressure produced? Explain by sketch "motive Column" as applied to natural ventilation pressure?	**07**
	(b)	Explain ventilation stopping, Air crossings, and Doors.	**07**
		OR	
Q.4	**(a)**	Explain accessional and declensional ventilation with a neat sketch. Add a note On Air Locks.	**07**
Q.4	**(b)**	Explain "splitting in underground workings".	**07**
Q.5	**(a)**	Write short note on Booster and auxiliary fans with sketch.	**07**
	(b)	Describe ventilation of deep mines and add a note on air-conditioning.	**07**
		OR	
Q.5	**(a)**	What is the basic principle behind the pressure survey in a mine? Explain Inclined monometer for the pressure ventilation survey.	**07**
	(b)	Give the laws which govern the passage of air in a mine. Write the short notes On kilomurg and equivalent orifice of a mine.	**07**

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