Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2024

Subject Code:3162207 Date:17-05-2024

Subject Name:Mine Ventilation

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Discuss the composition of mine atmosphere.	**03**
	(b)	List out different types of damps in underground mines with their composition of gases.	**04**
	(c)	Explain principle of wheat stone bridge with neat sketch.	**07**
Q.2	**(a)**	Discuss effects of heat and humidity in mines.	**03**
	(b)	Explain the flame safety lamp and its uses.	**04**
	(c)	Describe characteristics, properties and their physiological effect of Carbon Monoxide (CO).	**07**
		OR	
	(c)	Describe characteristics, properties and their physiological effect of Methane (CH4).	**07**
Q.3	**(a)**	Define humidity. How it is determined in mines?	**03**
	(b)	Define relative humidity. Explain hygrometer with neat sketch.	**04**
	(c)	Explain PS detector, Hopcalite detector and Hoolamite tube.	**07**
		OR	
Q.3	**(a)**	Explain kata thermometer with neat sketch.	**03**
	(b)	Describe the characteristics and suitability of fans.	**04**
	(c)	Explain Multigas detector with neat sketch.	**07**
Q.4	**(a)**	Discuss the causes of natural ventilation.	**03**
	(b)	Describe parallel and series operation of mines fans.	**04**
	(c)	Explain working of natural ventilation with neat sketch.	**07**
		OR	
Q.4	**(a)**	Discuss the effect of seasonal variations in natural ventilation.	**03**
	(b)	Describe the forcing and exhaust configurations of fan.	**04**
	(c)	Explain the planning of ventilation systems and economic considerations.	**07**
Q.5	**(a)**	Discuss the permissible air velocities in different types of workings.	**03**
	(b)	Explain ventilation layouts for mining of coal and ore deposits.	**04**
	(c)	Explain thermodynamics of ventilation in brief.	**07**
		OR	
Q.5	**(a)**	Discuss the permissible standards of ventilation.	**03**
	(b)	Differentiate between Homotropal and Antitropal ventilation.	**04**
	(c)	Explain the construction and working of Booster fan and Auxiliary fan with neat sketch.	**07**

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