

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2022****Subject Code:3162207****Date:03/06/2022****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) Describe the characteristics and suitability of fans.	04
	(c) Explain working of natural ventilation with neat sketch.	07
Q.2	(a) Define humidity. How it is determined in mines?	03
	(b) List out different types of dampers in underground mines with their composition of gases.	04
	(c) Explain PS detector, Hopcalite detector and Hoolamite tube.	07
	OR	
	(c) Explain principle of wheat stone bridge with neat sketch.	07
Q.3	(a) Discuss the causes of natural ventilation.	03
	(b) Define relative humidity. Explain hygrometer with neat sketch.	04
	(c) Describe characteristics, properties and their physiological effect of Carbon Monoxide (CO).	07
	OR	
Q.3	(a) Discuss the effect of seasonal variations in natural ventilation.	03
	(b) Explain the flame safety lamp and its uses.	04
	(c) Describe characteristics, properties and their physiological effect of Methane (CH ₄).	07
Q.4	(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.4	(a) Discuss the permissible standards of ventilation.	03
	(b) Describe parallel and series operation of mines fans.	04
	(c) Explain the planning of ventilation systems and economic considerations.	07
Q.5	(a) Discuss effects of heat and humidity in mines.	03
	(b) Describe the forcing and exhaust configurations of fan.	04
	(c) Explain the construction and working of Booster fan and Auxiliary fan with neat sketch.	07
	OR	
Q.5	(a) Explain kata thermometer with neat sketch.	03
	(b) Differentiate between Homotropical and Antitropical ventilation.	04
	(c) Explain Multigas detector with neat sketch.	07
