

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI EXAMINATION – SUMMER 2025

Subject Code: 3162207

Date: 22-05-2025

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 permissible standards of ventilation.	03
(b) Explain the flame safety lamp and its uses.	04
(c) Explain thermodynamics of ventilation.	07
Q.2 (a) Discuss the composition of mine atmosphere.	03
(b) Differentiate between Homotropical and Antitropical ventilation.	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) Describe the characteristics and suitability of fans.	04
(c) Explain working of natural ventilation with neat sketch.	07
OR	
Q.3 (a) Discuss the effect of seasonal variations in natural ventilation.	03
(b) Describe parallel and series operation of mines fans.	04
(c) Explain the planning of ventilation systems and economic considerations.	07
Q.4 (a) Define humidity. Discuss the procedure for determine humidity in mines.	03
(b) Define relative humidity. Explain hygrometer with neat sketch.	04
(c) Explain the construction and working of Booster fan and Auxiliary fan with neat sketch.	07
OR	
Q.4 (a) Discuss effects of heat and humidity in mines.	03
(b) Describe the forcing and exhaust configurations of fan.	04
(c) Explain Multigas detector with neat sketch.	07
Q.5 (a) Explain kata thermometer with neat sketch.	03
(b) Enlist different types of damp in underground mines with their composition of gases.	04
(c) Describe characteristics, properties and their physiological effect of CO.	07
OR	
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) Describe characteristics, properties and their physiological effect of CH ₄ .	07
