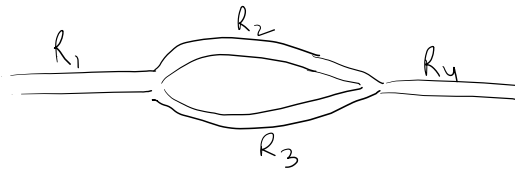


GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2023****Subject Code:3162207****Date:06-07-2023****Subject Name:Mine Ventilation****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

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) Define natural ventilation.	03
	(b) List the sources of heat in mine.	04
	(c) Explain the planning of the ventilation system in an underground coal mine.	07

Q.2	(a)	03
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Calculate the equivalent resistance of the given circuit of airway if the value of resistances is as follows:

R1-9 units , R2-6units , R3-3 units and R4-3 units

(b)	List the factors affecting natural ventilation in an underground mine	04
(c)	Write short notes on:	07
	1. White damp	
	2. NPV and motive column	

OR

(c)	In a underground coal mine a horizontal airway 3 m wide and 2.5 m wide is ventilated with airflow of 900 m ³ /min. If rate of methane emission in the airway is 1.5 m ³ /min, calculate the methane layering number and state whether the ventilation is adequate to break the layering.	07
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Q.3	(a) What do you mean by equivalent orifice with respect of mine ventilation?	03
	(b) Explain the working of methanometer.	04
	(c) What are the objective of methane drainage?	07

OR

Q.3	(a) Briefly describe the different methods employed for improving the cooling power of mine.	03
	(b) List the effect of heat and humidity on human body.	04
	(c) Explain the working of kata thermometer.	07

Q.4	(a) Explain fire damp.	03
	(b) Differentiate between evasee and diffuser.	04
	(c) What are different types of mine fans? Explain in detail.	07

OR

- Q.4** (a) Explain after damp. **03**
(b) Explain Psychrometry in detail. **04**
(c) Explain the method of determination of NPV in underground mine from thermodynamics consideration. **07**

- Q.5** (a) Define methane layering. **03**
(b) Elaborate Standard Of Ventilation. **04**
(c) Explain effect of connection of different type of fan in series and parallel in underground mine. **07**

OR

- Q.5** (a) Define ventilation survey. **03**
(b) Explain flame safety lamp and its uses. **04**
(c) What do you mean by, Reversal of Flow with respect to mechanical ventilation in underground mines? **07**
