

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER- VII EXAMINATION-SUMMER 2023****Subject Code: 2170908****Date: 28/06/2023****Subject Name: Switch Gear and Protection****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 basic elements of protective systems	03
	(b) If plug setting is 150% and CT ration is 100:1, fault current is 750 amp. Calculate plug setting multiplier.	04
	(c) Discuss carrier current protection system.	07
Q.2	(a) Discuss percentage differential protection scheme	03
	(b) Discuss Merz-Price Protection system for power transformer	04
	(c) Discuss three step distance time protection	07
	OR	
	(c) Discuss comparative analysis between Impedance relay, Reactance relay, and Mho relay.	07
Q.3	(a) List out possible abnormal conditions for induction motor.	03
	(b) Discuss phase reversal protection for induction motor.	04
	(c) Discuss protection against loss of excitation of generator	07
	OR	
Q.3	(a) Discuss single phase preventer.	03
	(b) Discuss short circuit protection for induction motor.	04
	(c) Discuss Restricted earth fault protection of generator	07
Q.4	(a) Discuss the factors responsible for arc resistance in the circuit breaker	03
	(b) Discuss the effect of power factor on transient recovery voltage	04
	(c) Discuss the block diagram of numerical relay	07
	OR	
Q.4	(a) Discuss the methods used for arc extinction in circuit breaker.	03
	(b) Discuss the effect of natural frequency on transient recovery voltage	04
	(c) Discuss numerical distance protection	07
Q.5	(a) Discuss the working of vacuum circuit breaker	03
	(b) Compare current transformer and potential transformer	04
	(c) Discuss cross blast type and axial blast type (air) circuit breaker.	07
	OR	
Q.5	(a) Discuss the significance and construction of capacitive voltage transformer.	03
	(b) What is auto reclosing and why is it required?	04
	(c) Discuss the working of non-puffer type SF6 circuit breaker	07
