

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024****Subject Code:2170908****Date:28-05-2024****Subject Name:Switch Gear and Protection****Time:02:30 PM TO 05:00 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 reach, under reach and over reach of the relay.	03
	(b) Compare measuring CT and protective CT.	04
	(c) Explain construction and working of induction disc type electromagnetic relays.	07
Q.2	(a) Explain principle of differential relay.	03
	(b) Explain primary and back-up protections.	04
	(c) Explain drawbacks of a simple differential scheme and the techniques to overcome these drawbacks using percentage differential relay.	07
	OR	
	(c) Explain Percentage Differential Protection of Delta/Star power transformer with neat sketch diagram.	07
Q.3	(a) Define: Plug Setting, Plug Setting Multiplier (PSM) and Time Multiplier Setting (TMS).	03
	(b) Explain the need for a three stepped distance protection of a transmission line.	04
	(c) Explain the effect of “Loss of Excitation” of generator and its protection scheme.	07
	OR	
Q.3	(a) What is the effect of loss of prime mover on generator?	03
	(b) Explain with respect to induction motor protection: (a) Single phasing (b) ground fault.	04
	(c) Write short note on Buchholz relay.	07
Q.4	(a) What is the application of coupling and trapping the carrier into the line section?	03
	(b) Explain mho relay characteristic for distance protection.	04
	(c) What is power swing in power system? Evaluate performance of distance relay in case of a power swing.	07
	OR	
Q.4	(a) Explain need for carrier aided protection of transmission lines.	03
	(b) Explain impedance relay characteristic for distance protection.	04
	(c) Explain the construction and working of the numerical relay with neat diagram.	07
Q.5	(a) Explain the terms with reference to circuit breaker: (a) Breaking Current (b) Making Current	03
	(b) Explain current chopping in brief.	04

- (c) Explain construction and working of Minimum Oil Circuit Breaker (MOCB). **07**

OR

- Q.5** (a) Differentiate between Bulk Oil circuit breaker and SF₆ circuit breaker. **03**
(b) Explain the effect of natural frequency on TRV. **04**
(c) What is the restriking and recovery voltage? Discuss factors affecting with them. **07**
