

Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII EXAMINATION – SUMMER 2025

Subject Code:2170908

Date:21-05-2025

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) What is a fault? What are the causes and effects of a fault?	03
(b) Explain the protective zone with respect to protective system.	04
(c) Derive the expression for the torque of an induction disc type relay.	07
Q.2 (a) Define following terms (i) Reliability (ii) Selectivity (iii) Reach.	03
(b) Classify: measurement CT and protective CT	04
(c) Explain the construction and working of the numerical relay.	07
OR	
(c) Explain working principle of Percentage Differential Protection.	07
Q.3 (a) What are the drawbacks of over-current protection?	03
(b) Explain magnetizing inrush phenomenon of transformer.	04
(c) Write short note on Buchholz relay.	07
OR	
Q.3 (a) Explain the effect of Arc Resistance on Reach of MHO relay.	03
(b) Explain Three step distance protection.	04
(c) Explain Restricted Earth Fault Protection of power transformer.	07
Q.4 (a) Explain: Single phasing and ground fault of induction motor protection.	03
(b) How protection against single phasing is provided?	04
(c) Explain phase comparison relaying (unit scheme).	07
OR	
Q.4 (a) Enlist the various equipment used for carrier aided protection of transmission lines.	03
(b) Explain protection of generator against unbalanced loading	04
(c) List and explain different protections used for an induction motor.	07
Q.5 (a) Discuss the effect of natural frequency on TRV.	03
(b) Explain Re-striking voltage transient characteristics of CB.	04
(c) Discuss constructional features and working of Air CB.	07

OR

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| Q.5 | (a) | Discuss Slepian's theory of arc extinction. | 03 |
| | (b) | Explain current chopping. | 04 |
| | (c) | Explain SF6 circuit breaker with neat sketch diagram. | 07 |
