

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024****Subject Code:2170908****Date:07-12-2024****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) Explain the basic connections of trip circuit.	03
	(b) Write short note on Buchholz relay.	04
	(c) Explain construction and working of Different Electromagnetic Relays.	07
Q.2	(a) Define the term (1) Fault and (2) Overload.	03
	(b) Give classification of different types of relays.	04
	(c) Define the following: (i) Reset time (ii) Pick up (iii) Burden (iv) Blind spot (v) interlock (vi) Drop off ratio (vii) Plug setting Multiplier (P.S.M.)	07
	OR	
	(c) For Impedance, Mho and Reactance relay, explain the effect of power swing with help of suitable relay characteristic diagram.	07
Q.3	(a) Differentiate between Fuse and MCB.	03
	(b) Compare minimum oil CB and bulk oil CB.	04
	(c) Explain the principle of Directional relay with the help of appropriate phasor diagram. Also explain the significance of maximum torque angle of the directional relay.	07
	OR	
Q.3	(a) Draw and explain earth leakage current protection scheme.	03
	(b) Enlist all Arc interruption theories and explain any one of them in detail.	04
	(c) Explain any one Feeder protection scheme in detail with suitable schematic diagram.	07
Q.4	(a) Discuss primary and back-up protection.	03
	(b) Explain Following with reference to Circuit Breaker: (a) Breaking Current (b) Making Current	04
	(c) Explain Transformer Differential protection scheme with necessary diagram.	07
	OR	
Q.4	(a) What is the need of Carrier aided protection scheme.	03
	(b) Enlist various faults & abnormal operation conditions of Induction Motor.	04
	(c) Enlist all protection schemes of the Alternator and explain rotor earth fault protection in detail.	07
Q.5	(a) Define following terms (i) Recovery voltage (ii) Re-striking voltage (iii) RRRV.	03
	(b) Differentiate between measuring CT and Protective CT.	04
	(c) Illustrate and explain the percentage differential protection of synchronous generator for internal and external fault conditions.	07

OR

- Q.5**
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| (a) | Give the sequence of operation between Isolator, Circuit breaker and Earthing switch in substation for (1) Closing the breaker & (2) Opening the breaker | 03 |
| (b) | Explain the function of Current Transformer and Potential Transformer with suitable diagram. | 04 |
| (c) | Explain the construction and working of SF6 circuit breaker with suitable diagram. | 07 |
