SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Regular Examinations February-2024
POWER SYSTEMS PROTECTION
(Electrical and Electronics Engineering)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1		Explain the principle and operation of Vacuum Breaker with diagram.	CO1	L1	12M
		OR			
2		What is resistance switching and derive the expression for critical resistance in terms of system inductance and capacitance which gives no transient oscillation?	CO1	L1	12M

UNIT-II

3	a	List the advantages and disadvantages of microprocessor based relays.	CO3	L1	6M
	b	Explain the working of a static over current relay	CO3	L1	6M
		OR			
4	a	Derive the expression for torque developed in induction relay.	CO3	L1	6M
	b	What is universal torque equation? Using this equation derive the following (i) Impedance relay (ii) reactance relay (iii) Mho relay	CO3	L1	6M

UNIT-III

5	a	Enumerate the relaying schemes, which are employed for the protection of a modern alternator.	CO3	L1	6M
	b	An 11kv,1000 MVA generator is provided with differential scheme of protection. The percentage of generator winding to be protected against phase to ground fault is 80%,the relay is set to be operate when there is a 15% out of balance current determine the value of resistance to be placed in neutral to ground connection.	CO4	L3	6M
		OR			
6	a	Discuss the percentage differential protection scheme of a transformer.	CO3	L1	6M
	b	Explain the working principle of buch-holtz relay with neat diagram.	CO3	L1	6M

UNIT-IV

7	a	Elaborate on various methods for protection of feeders.	CO5	L1	6M
	b	What is the importance of bus-bar protection? What are the requirements of protection of lines?	CO5	L1	6M
		OR			
8		Explain over-current protection of feeders. How is the protection system graded with respect to the time of operation of relays for a radial feeder.	CO5	L1	12M

UNIT-V

9	a	Explain and sketch neat diagram of valve type lightning arrester.	CO6	L1	6M
	b	Enumerate the basic concepts of insulation coordination.	CO6	L1	6M
		OR			
10	a	With a neat diagram explain the operation of any one type of lightning arrester.	CO6	L3	6M
	b	Discuss and compare the various methods of neutral earthing .	CO6	L1	6M

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