Total No. of Printed Pages:2

SUBJECT CODE NO:- H-342
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (EEP/EE/EEE)
Power System Protection
(REVISED)

[Time: Three Hours]   [Max.Marks:80]

Please check whether you have got the right question paper.

N.B
1. Q.no.1 and Q. no.6 are compulsory.
2. Solve any two question from section A & B each, excluding compulsory questions.
3. Assume suitable data if Necessary.

Section A

Q.1	Attempt any five	10
	a) Classify Distance relay	
	b) What is zone protection?	
	c) Define operating force and restraining force.	
	d) Why Distance protection is Necessary?	
	e) State Application of Static relay.	
	f) Explain working principle of differential relay	
	g) Define current setting & Pickup level.	

Q.2   a) Derive Torque Equation for Induction type relay.   07

      b) Determine the time of operation of 5 amps 3 second over current relay having current setting of 125% & time setting multiplier of 0.6 connected to a supply circuit though a 400 / 5 C.T When a circuit carries fault current of 4000 amp(consider time of operation 3.5 second)   08

Q.3   a) State the type of functional relay & explain Induction type directional over current relay.   07

      b) Explain in detail Percentage differential relay with its advantages.   08

Q.4   a) Explain Different types of faults occurred in Induction motor.   07

      b) Explain Buchholz relay.   08

Q.5   Write a short note

      a) Single phasing Preventer   05

      b) Translay relay   05

      c) Thermal relay   05

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Section B

Q.6	Attempt any five	10
	a) Write the Application of Circuit Breaker.	
	b) What is difference between recovery voltage & arc voltage?	
	c) What is Arc Phenomenon?	
	d) State Application & Properties of SF6 circuit Breaker	
	e) What do you mean by recovery voltage?	
	f) State the factors on which Arc resistance is depends.	
	g) List significance of backup protection.	

Q.7   a) Explain in details Vacuum circuit breaker.   07
        b) Explain carrier aided protection of transmission line scheme.   08

Q.8   a) Explain in detail Microprocessor based impedance relay.   07
        b) Explain in detail Air circuit breaker.   08

Q.9   a) An 11KV 500MVA circuit breaker suddenly closes on a top fault determine   07
           1) Symmetrical breaking current
           2) Asymmetrical breaking current assuming 50% of D.C. Component
           3) The peak making current
           4) Short time current rating

        b) Explain MHO relay characteristic on the R-X diagram. Discuss the range setting of various distance relays placed on particular location.   08

Q.10   Write a short note
        a) Protection of substation against direct stroke   05
        b) Peterson coil   05
        c) Lightning arrester.   05