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Reg. No. : | | | | | | | | | | |

Question Paper Code: 56402

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

Sixth Semester

Electrical and Electronics Engineering

15UEE602–PROTECTION AND SWITCH GEAR

(Regulation 2015)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Relays for transmission line protection are CO1- R

(a) In three zones (b) In two zones

(c) Independent of zones (d) Dependent zone

2. Advantages of grounded neutral is CO1- R

(a) Persistent arcing grounds are eliminated

(b) Earth faults are utilized to disconnect the fault

(c) Both (a) and (b)

(d) Difficult in Locating a line to ground fault

3. Plug setting of a relay can be altered by varying CO2- R

(a) Air gap of magnetic path (b) No of ampere turns

(c) Adjustable back up stop (d) None of these

4. For protection against synchronizing power surges, which relay is used CO2- R

(a) Split phase relay (b) Impedance relay (c) Reactance relay (d) MHO relay

5. Pilot wire protection is for CO3- R

(a) Over head lines (b) Transformer (c) Motors (d) Cables

6. Minimum faults occur in which of the power system equipment CO3- R

(a) CT,PT (b) Transformer (c) switchgear (d) alternator

7. The type of relays used in the conventional electric power system are of CO4- R

(a) Electro-Mechanical (b) Electronic (c) Mechanical (d) Thermal

8. Carrier current protection scheme is normally used for CO4- R

(a) HV transmission line only (b) HV cables only

(c) HV transmission line and cable (d) EHV cables only

9. SF_6 is which type of gas? CO5- R

(a) Electro positive (b) Electro negative (c) Both (a) and (b) (d) None of these

10. Which of the following circuit breakers has the lowest operating voltage? CO5- R

(a) SF_6 circuit breaker (b) Air break

(c) Air blast (d) Minimum oil circuit breaker

PART – B (5 x 2= 10Marks)

11. Mention the different types of faults occurring in power system? CO1- R
12. State the merits of mho relay and also draw its R-X diagram. CO2- R
13. Explain why the secondary of CT should not be opened? CO3- R
14. Define the Inverse Time Over-current Relay and draw the characteristic curve. CO4- R
15. Illustrate the disadvantages of an Air blast circuit breaker? CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Explain the method of calculating fault current using symmetrical components. CO1- U (16)

Or

	(b)	(i) Explain the essential qualities to be met by a protection scheme.	CO1- U	(8)
		(ii) Explain the different zones of protection with neat a diagram.	CO1- U	(8)
17.	(a)	Explain the construction and operation of induction type directional relay with the help of a neat diagram.	CO2-U	(16)
		Or		
	(b)	Explain the operation of negative sequence relay with phasor diagram.	CO2-U	(16)
18.	(a)	Mention the protection schemes for protection for transformer and explain the working of Buccholz relay with a neat diagram.	CO3- U	(16)
		Or		
	(b)	Explain the differential protection of an alternator windings what are the disadvantages and how are they overcome.	CO3- U	(16)
19.	(a)	Explain in detail about distant protection of transmission lines.	CO4 U	(16)
		Or		
	(b)	Illustrate with neat Block diagram, the Numerical Transformer Differential Protection scheme.	CO4 Ana	(16)
20.	(a)	(i) Derive the expression for Restriking voltage and maximum Rate of Rise of Recovery Voltage.	CO5-Ana	(8)
		(ii) Determine the RRRV of 132 kV circuit breaker with neutral earthed circuit breaker data as: broken current is symmetrical, restriking voltage has frequency of 20 kHz, and power factor is 0.15. Assume fault is also earthed.	CO5-App	(8)
		Or		
	(b)	With a neat sketch explain the principle of vacuum circuit breaker and SF6 circuit breaker.	CO5 U	(16)

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