A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 56402

B.E. / B.Tech. DEGREE EXAMINATION, NOV 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. Find the name of Peterson coil grounding? CO1- R

   (a) Solid grounding (b) Resistance grounding

   (c) Resonant grounding (d) Reactance earthing

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. A differential relay measures the vector difference between CO2- R

   (a) Two currents (b) Two voltages

   (c) Two or more similar electrical quantities (d) Two power

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 component used in the output circuit of the static relay is CO4- R

(a) OP-AMP (b) Thyristor (c) Capacitor (d) Comparator

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 one is more robust in nature? CO5- R

(a) Electromagnetic relay (b) static

(c) over current (d) numerical

PART – B (5 x 2= 10Marks)

11. What is meant by backup Protection 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. List the merits of Static Relay over electromagnetic relay. 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) List the various types of protection and Explain the zones of protection with relevant diagram. CO1- U (8)

(ii) Explain the different zones of protection with neat a diagram. CO1- U (8)

17.	(a)	Describe the operating principles and characteristics of impedance and MHO Relays.	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)	A generator is protected by restricted earth-fault protection. The generator ratings are 13.2 kV, 10 MVA. The % of winding protected against phase-ground fault is 85%. The relay setting is such that it trip for 20% out of balanced. Calculate the resistance to be added in neutral to ground connection.	CO3- U	(16)
19.	(a)	With neat sketches, explain the operation of static Distance Relay	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 neat sketches, explain the construction and working principle of about the air break and minimum oil circuit breaker	CO5 -U	(16)