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Question Paper Code: U6302

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2024

Sixth Semester

Electrical and Electronics Engineering

21UEE602 - PROTECTION AND SWITCHGEAR

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. What is the function of fuse? CO1- U
 - (a) Protect the line
 - (b) Open the circuit
 - (c) Protect the appliance
 - (d) Prevent excessive currents
2. Identify the protective device given below CO1- U
 - (a) Fuse
 - (b) Relay
 - (c) Circuit Breaker
 - (d) all of the above
3. Directional relays are based on flow of CO2-U
 - (a) Power
 - (b) Current
 - (c) Voltage Wave
 - (d) All of the above
4. Which are the common methods used for transmission line protection? CO2-U
 - (a) Time graded over current protection
 - (b) Differential protection
 - (c) Distance protection
 - (d) All of the above
5. Large internal faults are protected by CO3-U
 - (a) Merz price percentage differential protection
 - (b) mho & ohm relays
 - (c) Overcurrent relays
 - (d) earth fault & sequence relays
6. If the fault current is 2000 A, the relay setting is 50% and CT ratio is 400 : 5, then plug setting multiplier will be CO3-U
 - (a) 10A
 - (b) 15A
 - (c) 25 A
 - (d) 50A

7. Static relays _____ moving parts. CO4-U
 (a) have (b) do not have
 (c) may/may not have (d)) none of these
8. The comparator which processes both magnitude and phase angle is CO4-U
 (a) Phase (b) Amplitude
 (c) Hybrid (d) None of the above
9. Which of the following is not a type of the contactor for circuit breakers? CO5-U
 (a) Electro-magnetic (b) Electro-pneumatic
 (c) Pneumatic (d) Vacuum.
10. Low voltage circuit breakers have rated voltage of less than CO5-U
 (a) 220 V (b) 400V (c) 1000 V (d) 10,000 V.

PART – B (5 x 2= 10 Marks)

11. Identify the significance of speed of operation of a protection scheme. CO1-U
12. Define PSM and TSM. CO1-U
13. List the common methods used for line protection. CO1-U
14. Draw the block diagram of a static relay. CO1-U
15. What is meant by Recovery Voltage? CO1-U

PART – C (5 x 16= 80 Marks)

16. (a) Explain the reasons leading to the general practice of earthing the neutral point and discuss the various methods of earthing. CO1- U (16)
- Or
- (b) Explain in details about Zones of protection . CO1- U (16)
17. (a) Make use of a protective schemes, suggest a protective relay which operates during the occurrence of phase unbalance. CO3-App (16)
- Or
- (b) Make use of a protective schemes, suggest a protective relay which operates during the occurrence of frequency change in power system. CO3-App (16)

18. (a) With neat sketches, explain the instrument transformers in detail CO4- U (16)
- Or
- (b) Compare the role of CT, PT and their applications in protection schemes. CO4- U (16)
19. (a) Explain numerical over current protection & differential protection of transformer. CO5- U (16)
- Or
- (b) With block diagram, explain the operation of static over current relay. CO5- U (16)
20. (a) With neat sketches, explain the construction and working principle of air break and minimum oil circuit breaker. CO6- U (16)
- Or
- (b) Explain the construction and working of S_{F6} circuit breakers and write its advantages and disadvantages. CO6- U (16)

