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Question Paper Code: 45305

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Electrical and Electronics Engineering

14UEE505 - PROTECTION AND SWITCH GEAR

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- The over-voltage surges in power systems may be caused by
 - Lightning
 - Switching
 - Resonance
 - Any of the above
- The plug setting of a negative sequence relay is 0.2 A. The current transformer ratio is 5: 1. The minimum value of line to line fault current for the operation of the relay is
 - 1a
 - 1/ 1.732 A
 - 1.732 A
 - 0.2 / 1.732 A
- A differential relay measures the vector difference between
 - Two current
 - Two voltage
 - Two or more similar electrical quantities
 - None of the above
- A Merz-price protection is suitable for
 - Transformers
 - Alternators
 - Feeders
 - Transmission lines
- A large size alternator is protected against overloads by providing
 - over current relay
 - Temperature sensitive relay
 - Thermal relay
 - None of these

7. Protective relays can be designed to respond to _____
- (a) Light intensity, impedance (b) Temperature, resistance, reactance
(c) Voltage and current (d) All of these
8. Mho relay is used for the protection of
- (a) Long transmission lines (b) Short length lines
(c) Medium length lines (d) No length criterion
9. Which of the following circuit breakers is used for the railway electrification?
- (a) Air blast circuit breaker (b) SF₆ circuit breaker
(c) Bulk oil circuit breaker (d) Minimum oil circuit breaker
10. The voltage appearing across the contacts after opening of the circuit breaker is called
- (a) Recovery voltage (b) Surge voltage
(c) Operating voltage (d) Arc voltage

PART - B (5 x 2 = 10 Marks)

11. What do you mean by Pickup current.
12. List out the different types of distance relay.
13. What are the various faults that would affect an alternator?
14. Compare static two electromagnetic relay.
15. What do you mean by insulation coordination?

PART - C (5 x 16 = 80 Marks)

16. (a) Discuss and compare the various methods of neutral earthing. (16)
- Or
- (b) (i) Describe the essential qualities of a protection relay. (8)
(ii) Explain the overlapping of protective zones with neat sketch. (8)
17. (a) With a neat flow chart, explain the function of Microprocessor based directional over current relay. (16)

Or

- (b) (i) Describe the construction details and principle of operation of directional power relay. (8)
- (ii) Derive and explain universal torque equation. (8)
18. (a) Enumerate the relaying schemes which are employed for the protection of a modern alternator. (16)

Or

- (b) Briefly explain the various types of stator fault protection of alternator. (16)
19. (a) (i) Explain different types of cost in inventory system and also list the models of What is static relay? (8)
- (ii) How will you synthesize a mho relay using static phase comparator? (8)

Or

- (b) List and explain the different protective scheme applied for bus bar protection. (16)
20. (a) Describe the recovery rate theory and the energy balance theory for arc interruption in a circuit breaker. (16)

Or

- (b) Describe the construction, operating principle and application of vaccum circuit breaker. For what voltage range it is recommended? (16)
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