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

Question Paper Code: 45035

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

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)

1. What is switchgear?
   (a) It is used for switching, controlling and protecting the electrical circuits& equipments
   (b) It detects the faults only
   (c) It corrects the faults only
   (d) All of the above

2. The ground wire should not be smaller than No _____ copper.
   (a) 2 (b)4 (c) 6 (d) 10

3. On what factor does the operating speed of the relay depend?
   (a) Rate of flux built up (b) Armature core air gap
   (c) Spring tension (d) All of these

4. What is the actuating quantity for the relays?
   (a) Magnitude (b) Frequency (c) Phase angle (d) All of these

5. Isolators are used for
   (a) Break abnormal current (b) Making under fault conditions
   (c) Breaking the circuit under no load condition (d) None of the above

6. What is the purpose of back up protection?

(a) To increase the speed (b) To increase the reach
(c) To leave no blind spot (d) To guard against failure of primary

7. Protective relays can be designed to respond to _____

(a) Light intensity, impedance (b) Temperature, resistance, reactanc
(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) SF_6 circuit breaker
(c) Bulk oil circuit breaker (d) Minimum oil circuit breaker

10. What type of circuit breaker is preferred to be installed in extra high voltage AC system?

(a) Bulk oil type circuit breaker (b) Air blast circuit breaker
(c) SF_6 circuit breaker (d) Vacuum circuit breaker

PART - B (5 x 2 = 10 Marks)

11. What are the types of faults?

12. What is differential relay?

13. State the protection schemes used for protecting the transformer.

14. Differentiate the phase comparator and amplitude comparator.

15. What do you meant by insulation coordination?

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Explain the necessity to protect the transmission lines and other equipment of the power system against over voltages. (8)

(ii) Draw the single line diagram of a modern power system. Discuss various zones of protection for a modern power system. (8)

Or

(b) (i) Describe the symmetrical and unsymmetrical faults which may occur in power system. (8)

(ii) With a neat sketch, explain the working principle of resistance grounding. Also mention its merits and demerits. (8)

17. (a) With a neat flow chart, explain the function of Microprocessor based directional over current relay. (16)

Or

(b) With a neat sketch, explain the construction and operation of Buchholz relay with their merits and demerits. (16)

18. (a) (i) Explain the type of pilot protection used for EHV and UHV transmission lines. (8)

(ii) Draw and explain the protection scheme of AC induction motor. (8)

Or

(b) Enumerate the relaying schemes which are employed for the protection of a modern 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) Draw the block diagram for numerical relays and explain about over current protection, differential protection of transformer using numerical relays. (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)
