Code No: 11551/CBCS

FACULTY OF ENGINEERING

B.E. VI – Semester (CBCS) (EEE) (Main) Examination, May / June 2019

Subject: Switch Gear and Protection

Time: 3 Hours **Max. Marks: 70**

Note: Answer all questions from Part – A & any five questions from Part – B.

PART – A (10 x 2 = 20 Marks)

1. Distinguish between primary and back up protection (2)
2. What is universal relay torque equation? (2)
3. Draw the block diagram of microprocessor based over current relays (2)
4. Define the terms (2)
   a) Recovery voltage
   b) Restriking voltage.
5. What are the causes and effects of over voltages (2)
6. Give a brief note about the Auto Reclosure (2)
7. What is magnetizing inrush current? (2)
8. The symmetrical breaking capacity of a circuit breaker is x MVA, find its making capacity value (2)
9. Write the differences between Amplitude comparator and phase comparator (2)
10. An over current relay of rating of 5 A and setting 150% is connected to the secondary of a CT of ratio 400/5 and the relay fault current is 30 A. Calculate the current in the line for which the relay picks up. (2)

PART – B (10 x 5 = 50 Marks)

11. a) Explain about generator transformer unit protection (3)
    b) With a neat diagram explain the construction and working of Stator Inter Turn Protection scheme (7)
12. a) Give a brief note about the duality between Amplitude comparator and phase comparator (6)
    b) Mention the types of Phase comparators (4)
13. a) With a neat sketch explain the construction and working principle of induction type directional relay. Also plot its V-I characteristic. (7)
    b) Draw one line diagram of power system network to illustrate different protective zones of system. (3)
14. a) Explain how the arc is initiated in circuit breakers (2)
    b) Derive an expression for Restriking voltage and Rate of Rise of Restriking Voltage of a circuit breaker (8)

contd…2

15. a) Describe the construction and principle of operation of operation of valve type lightning arrester (3)

b) What is a ground wire? How do ground wires protect the over head lines against direct lightning strokes (7)

16. a) Explain with a neat sketch the construction and working of SF_6 Circuit Breaker (5)

b) In a system of 132KV, 3 phase, 50 Hz, The circuit phase to ground capacitance is 0.01 μF, The inductance is 6 Henry. Calculate (5)

i) The poles of a CB if a magnetising current of 10 Amps (Instantaneous value) is interrupted. And also calculate

ii) The value of resistance to be used across the contacts to eliminate the restriking voltage

17. Write short notes on

a) Protective scheme for the Parallel feeder System. (4)

b) Peterson coil (3)

c) Buchholz Relay (3)

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