Code No. 6331 / M

FACULTY OF ENGINEERING

B.E. 3/4 (EEE) II – Semester (Main) Examination, June 2014

Subject: Switch Gear and Protection

Time: 3 Hours **Max.Marks: 75**

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

PART – A (25 Marks)

1 Define (i) Reach (ii) over reach and (iii) under reach with respect to the operation of a protective relay. (3)
2 Name different types of electromagnetic relays and write their field of applications. (2)
3 Distinguish between amplitude and phase comparators. (2)
4 Draw the block schematic diagram of microprocessor based over current relay. (3)
5 Discuss the protection employed against loss of excitation of an alternator. (3)
6 What is Bucchholz relay? (2)
7 For a 132 KV system, the reactance and capacitance upto the location of the circuit breaker is 3Ω and 0.015μF respectively. Calculate the frequency of transient oscillation and maximum value of RRRV. (3)
8 The symmetrical breaking capacity of a circuit breaker is x MVA, find its making capacity value. (2)
9 Define PSM of a relay. (2)
10 Write the causes and effects of over voltages in a power system network. (3)

PART – B (50 Marks)

11 (a) With a neat diagram explain the protective scheme for parallel feeders. (5)
(b) What are the various over current protection schemes? Write the merits and demerits of various over current protection schemes. (5)
12 What is an impedance relay? Explain in operating principle. Discuss how it is realized using the (i) electromagnetic principle (ii) amplitude comparator and (iii) phase comparator. (10)
13 (a) What are the abnormal conditions in a large alternator against which protection is necessary. (3)
(b) Explain with reasons the connection of C.Ts for protecting delta/star transformer. Justify your scheme of protection for (i) internal fault and (ii) external fault. (7)
14 (a) What is tower footing resistance? Discuss different methods to reduce this resistance. (5)
(b) Describe the construction and principle of operation of expulsion type lightning arrestor. (5)
15 What is resistance switching? Derive the expression for critical resistance in terms of system parameters which gives no transient oscillations. (10)
16 Write short notes on: (10)
a) Ratings of circuit breaker and b) Harmonic restraint relay.
17 (a) With a neat sketch explain the construction and working principle of directional relay. (7)
(b) Draw one line diagram of power system network to illustrate different protective zones of system. (3)

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