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Name.....

Reg. No.....

EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
JUNE 2009

PTEE 2K 702/EE 2K 804 : POWER SYSTEMS–III

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

Part A

I. (a) Explain the phenomenon of current chopping in a circuit breaker.

(b) Explain the terms (i) over voltage factor ; (ii) protective ratio.

(c) Write short notes on relaying time.

(d) Discuss the fundamental requirements of protective relaying.

(e) What are the characteristics of traction motor ?

(f) State the advantages of electric heating.

(g) Write short notes on energy conservation.

(h) What are D.C. and A.C. Harmonics for a 12 pulse converter ?

(8 × 5 = 40 marks)

Part B

II. (a) Explain the term insulation co-ordination. Describe the construction of volt-time curve and the terminology associated with impulse testing.

Or

(b) What are the different types of air blast circuit breaker ? Discuss their operating principle and area of applications.

(15 marks)

III. (a) A 5,000 kVA, 6,600 volts star connected alternator has a synchronous reactance of 2 ohms per phase and 0.5 ohm resistance. It is protected by a Merz price balanced current system which operates when the out of balance current exceeds 30 % of the load current. Determine what proportion of the alternator winding is unprotected if the star point is earthed through a resistor of 6.5 ohms.

Or

Turn over

(b) What are fundamental requirements of protecting relaying ? Explain with sketches the construction and operation of a induction disc type over current relay. Also derive the equation for the torque developed by such relay.

(15 marks)

IV. (a) Explain the theory of dielectric heating and state its applications. What are the advantages of dielectric heating ?

Or

(b) Describe the core type (Ajax Wyatt) induction furnace with a neat sketch and state its applications.

(15 marks)

V. (a) (i) Explain the concept of electrical energy auditing. (8 marks)

(ii) Write short note on mitigation method. (7 marks)

Or

(b) What are main objectives in designing the size and branches of A.C. Harmonic filters and D.C. harmonic filters in a HVDC substation.

(15 marks)

[4 × 15 = 60 marks]