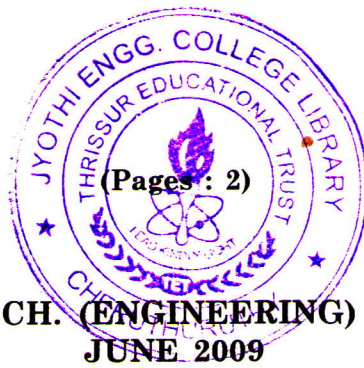


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Name.....

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]