Eighth Semester B. Tech. [ELECTRICAL] Degree Examination

(2013 Scheme- April/May 2017)

13.805.1 POWER SYSTEM INSTRUMENTATION (E) (Elective IV)

Time: 3Hours Max. Marks: 100

- ***Instruction:*** *Answer* ***all*** *questions from Part* ***A****.* ***One full*** *question from* ***each*** *Module of Part* ***B****.*

PART A (*Each carries 2 mark****)***

1 Which are the errors in single phase energymeters?
2 Explain transient performance of CVT?
3 What are temperature scanners?
4 Describe any one method of pressure measurement in hydroelectric power plant?
5 Explain level measurement technique in hydroeletric power plant?
6 Explain flame monitoring?
7 Explain neutron flux measurement in nuclear power plant?
8 How is reactor safety ensured in nuclear power plants?
9 What is a numerical relay? What are its advantages over conventional type relays?
10 Compare a numerical relay with an electromagnetic relay?

PART B

MODULE 1

11 a) Explain the theory of CT with the help of equivalent circuit and phasor diagram and derive the expressions for actual transformation ratio and phase angle error **(10)**

b) A 100/5 A, 50 Hz current transformer has a bar primary and a rated secondary burden of 12.5 VA. The secondary winding has 196 turns and a leakage inductance of 0.96 mH .With a purely resistive burden at rated full load, the magnetization mmf is 16 A and the loss excitation requires 12 A. Find the ratio and phase angle errors. (10)

PTO

OR

12 Explain the construction, theory and operation of single phase induction type energymeter. **(20)**

MODULE 2

13 Explain any two methods for flow measurement in hydroelectric power plants in detail. **(20)**

OR

14 a)Explain temperature measurement methods in hydroelectric power plants **(10)**

b) What are the methods for measurement of vibration in hydroelectric power plants? 10

MODULE 3

15 a) Explain steam turbine instrumentation in thermal power plants. **((20)**

OR

b) Explain reactor power level and coolant measurements in nuclear power plants. **(20)**

PTO

MODULE 4

16 a) Explain single input, two input and multi input relays? **(10)**

b) Explain the theory of induction type electromagnetic relays? **(10)**

OR

17. a) Draw the block diagram of a numerical relay and briefly describe the functions of its various components? 10

18. b) What are the different types of electromagnetic relays? Discuss their field of applications? **10**