6E3115

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B. Tech. VIth Semester (Main/Back) Examination, June - 2010

Electrical Engineering

6EE6.2 Power System Instrumentation (Elective)

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt overall **five questions** selecting **one question** from **each unit**. All questions carry **equal marks**. (Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)*

Unit - I

1. a) Define accuracy and precisian with example and differentiate them. **(8)**

   b) Define Gaussian error curves and probable error. **(8)**

OR

   a) Describe various types of errors and explain the combination of errors. **(8)**

   b) A resistance is determined by voltmeter Ammeter method. The voltmeter reads $100\,v$ with a probable error of $\pm 12\,v$ and ammeter reads 10 A with a probable error of $\pm 2\,A$. Determine the probable error in the computed value of resistance. **(8)**

Unit - II

2. a) Explain the construction & principle of working of a linear voltage differential transformer (LVDT). Explain how the magnitude & direction of the displacement of core of an L.V.D.T. detected. **(8)**

   b) Describe the method for measurement of temperature with use of RTD's. And describe the advantages and limitations. **(8)**

OR

Differentiate between the following with suitable examples :- **(16)**

i) Transducers & Inverse Transducers.

ii) Active & Passive Transducers.

iii) Primary & Secondary Transducers.

iv) Analog & Digital Transducers.

Unit - III

3. a) Draw a block diagram of an a.c. signal conditioning system and the function of each block. **(8)**

   b) Write short notes on shielding & grounding. **(8)**

OR

   a) Explain the working principle of a function generator with block diagram. **(8)**

   b) Explain the sample & hold circuit. **(8)**

Unit - IV

4. a) Describe the constructional details of a single phase induction type energy type meter. **(8)**

   b) Explain the industrial metering and various types of industrial tariffs. **(8)**

OR

   a) Explain the circuit of a multimeter for measurement of a.c. voltages. **(8)**

   b) Describe the active and reactive power in the different plants. **(8)**

Unit - V

5. a) Describe how high currents & voltages are measured with the help of instrument transformer. Draw HR necessary diagrams. **(8)**

   b) Discuss the major sources of errors in current transformer. **(8)**

OR

   a) Describe the working of a capacitive type potential transformer with their transient behaviour. **(8)**

   b) Explain the wilson compensation method for reduction of errors in current transformers. **(8)**
