6E3115

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B. Tech. VI Sem. (Main & Back) Exam., May/June-2014
Electrical Engg.
6EE 6.2 Power System Instrumentation

Time: 3 Hours

Maximum Marks: 80
Min. Passing Marks: 24

Instructions to Candidates:-

*Attempt any **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.

Use of following supporting material is permitted during examination.

1._____   2._____

UNIT-I

Q.1 (a) The following 10 observations were recorded when measuring a voltage 41.7, 42.0, 41.8, 42.0, 42.1, 41.9, 42.0, 41.9, 42.5, 41.8

Find: [8]

(i) Probable error of one reading.

(ii) Standard deviation.

(b) Define the following for Gaussian distribution of data: [8]

(i) Precision index.

(ii) Standard deviation of mean.

Q.1 (a) A circuit was tuned for resonance by eight different students and the values of resonant frequency in KHz were recorded as 432, 447, 444, 435, 446, 444, 436 and 441. Calculate. [8]

   (i) Standard deviation.

   (ii) Variance.

   (b) Define the following with suitable examples: [8]

   (i) Systematic errors.

   (ii) Random errors.

UNIT-II

Q.2 (a) Explain the following characteristics of transducers: [8]

   (i) Input characteristics

   (ii) Transfer characteristics.

   (b) Explain the Construction and working principle of K-type thermocouple. [8]

OR

Q.2 (a) Explain the following with suitable diagrams: [8]

   (i) Bourden tubes.

   (ii) Bellows.

   (b) Explain the construction and working principle of seismic accelerators with suitable examples. [8]

UNIT-III

Q.3 (a) Explain the working principle of function generator with block diagram. [8]

(b) Explain the importance of sample and hold circuit with suitable diagrams. [8]

OR

Q.3 (a) Explain the working of frequency to voltage converters. [8]

(b) Discuss about the shielding and grounding circuit with suitable applications, advantages and disadvantages. [8]

UNIT-IV

Q.4 (a) What do you mean by power factor. Explain the method of measurement of power factor. [8]

(b) Discuss about the active and reactive power in the different plants. [8]

OR

Q.4 (a) Explain the working principle of single phase induction type energy meter. [8]

(b) Discuss about the various methods of phase angle and frequency measurements with neat sketches. [8]

UNIT-V

Q.5   Write short notes on the following:

(a) Capacitive voltage transformers.   [8]

(b) Transient performance of C. T.   [8]

OR

Q.5   Write short notes on the following:

(a) Wilson compensation method for reduction of errors in current transformers.   [8]

(b) Protection circuits of current transformers.   [8]