KUMARAGURU
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Register Number: ………….

B.E DEGREE EXAMINATIONS: DEC 2014

(Regulation 2013)

Third Semester

ELETRICAL AND ELECTRONICS ENGINEERING

UI3EET304**:** Measurements and Instrumentation

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1.   A DC wattmeter essentially consist of

    a)   two ammeters   b)   two voltmeters

    c)   a voltmeter and an ammeter   d)   a current and potential transformer

2.   The error of an instrument is normally given as a percentage of ……………..

3.   The insulation resistance of a transformer winding can be easily measured with

    a)   Wheatstone bridge   b)   Megger

    c)   Kelvin bridge   d)   voltmeter

4.   The Kelvin's double bridge is used to find **…**…………..

5.   Period measurement is done in frequency meters for achieving high accuracy in the case of

    a)   High frequencies   b)   Medium frequencies

    c)   D.C   d)   Low frequency

6.   Integrating type voltmeter measures the true ………….. Value of the input voltage over a fixed measuring period.

7.   One of the following is an active transducer

    a)   Strain gauge   b)   selsyn

    c)   Photovoltaic cell   d)   Photo emissive cells.

8.   In an L.V.D.T, the core is made up of a ………………

9.   The following is not a basic assembly of Data Logger

    a)   Main frames   b)   Front panel assembly

    c)   Power supply   d)   D/A converter

10.   The multichannel DAS has a single A/D converter preceded by a ……………..

PART B (10 x 2 = 20 Marks)

(Not more than 40 words)

11. List any four Static characteristics of a measuring system.

12. Name the sources of errors in D.C voltage measurement.

13. Classify the types of D.C bridges.

14. Draw the basic diagram of A.C bridge.

15. What are the advantages of digital instruments?

16. Label the essential parts of the ramp type DVM.

17. What are the characteristics of transducers?

18. Define inverse transducer.

19. What are the objectives of a DAS?

20. Define Smart Sensors.

PART C (5 x 14 = 70 Marks)
(Not more than 400 words)

Q.No. 21 is Compulsory

21. Demonstrate the construction and working principle of single phase Induction type Energy meter.

22. a) (i) Illustrate any one bridge circuit for the measurement of inductance. (10)

     (ii) Give some applications of Whetstone's bridge. (4)

(OR)

    b) Describe the circuit of Kelvin's double bridge used for measurement of low resistance. Derive the conditions for balance.

23. a) (i) Draw and explain the circuit of digital frequency meter. (10)

     (ii) Identify the types of digital voltmeters. (4)

(OR)

    b) Build the block diagram of digital Multimeter and explain its working operation.

24. a) (i) Describe the operation of a piezo-electric transducer. (8)

     (ii) Differentiate thermocouple and thermistor. (6)

(OR)

    b) Elaborate the working principle of LVDT and mention its advantages.

25. a) (i) What are the various configurations used in DAS? (6)

        (ii) State the different possibilities for a multichannel DAS. (8)

(OR)

b) State the different elements of compact data logger and with the help of a neat block diagram explain the function of each block.

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