2E1015

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B.Tech. I Year II Semester (Old/Back) Examination-2014
Common to all branches of Engg.
205 (C) Instrumentation Engineering

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 suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)*

Use of following supporting material is permitted during examination. (Mentioned in form no.205)

1. CALCULATOR

Unit - I

1. a) Define the following   (8)

    i)   True value

    ii)   Error

    iii) Accuracy

    iv)   Repeatability

    v)   Precision

    vi)   Reproducibility

    vii) Sensitivity

    viii) Limiting Error

    b) Readings obtained on measuring height of sixteen students are as follows

x	2	4	6	8	10
h	1	4	6	4	1

    Calculate

    i)   Mean

ii) Average deviation

iii) Normal curve

iv) Standard deviation (8)

OR

1. a) What is error? Explain different types of error and methods to minimize these errors (8)

   b) What is normal distribution? Explain how Gaussian curve helps in minimizing and finding probable error (8)

Unit - II

2. a) Briefly discuss different types of voltmeters and explain working of digital voltmeter in detail (8)

   b) What is a multimeter? Explain working and parts of electronic multimeter (8)

OR

2. a) Explain the working and principle of vector impedance meter (8)

   b) What is grounding and shielding? Explain its importance and methods of grounding and shielding (8)

Unit - III

3. a) Draw block diagram of a single beam CRO and explain function of each block (8)

   b) Discuss different types of CRO problems and their applications (8)

OR

3. a) How will you measure following using CRO (8)

   i) AC/DC voltage

   ii) Current

   iii) Phase

   iv) Frequency. Draw the various lissajous patterns observed on the screen

   b) Explain the construction of cathode Ray tube and write use of Aquadag coating (8)

Unit - IV

4. a) Describe the working of a sweep frequency generator and its application in CRO **(8)**

   b) Explain the working of wein Bridge oscillator and write its advantages **(8)**

OR

4. a) Draw block diagram of a signal generator capable of giving triangular, square, pulse and sine wave output **(2x4)**

   b) Explain the working of frequency synthesized signal generator **(8)**

Unit - V

5. a) Discuss the selection criteria of transducers in detail **(8)**

   b) Explain construction, working and laws of thermo couple **(8)**

OR

5. a) Explain construction and working of Bourdon tube type pressure transducer. How its sensitivity can be increased. **(8)**

   b) A wire has following parameters:

   length=523.8 ± 0.2 cms, Diameter=$0.062 \pm 1.2 \times 10^{-3}$ cm

   Resitivity (ρ)=$45.6 \times 10^{-6} \pm 0.15 \times 10^{-16}$ Ω cm.

   calculate normal resistance and uncertainty in resistance of wire **(8)**