MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : OE-EC604A Electronic Measurements and Measuring Instruments

UPID : 006753

Time Allotted : 3 Hours *Full Marks :70*

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer *any ten* of the following : [1 x 10 = 10]

(I) Lissajous pattern are used to measure _____ and _____.

(II) The _____ of a strain gauge varies with applied strain.

(III) Maxwell bridge is used to measure_____.

(IV) Trueness from the referrence measureds _____.

(V) What is harmonics in a signal?

(VI) CRO can not be used to measure _____.

(VII) _____ transducer required an additional energy source.

(VIII) What is data acquisition system?

(IX) The D' Arsonval galvanometer is a moving _____ instrument.

(X) _____ instrument is useful in measuring signal levels of individual harmonics in an unknown waveform.

(XI) in CRO, _____ is not a part of the verticle deflection system.

(XII) What is the thermoelectric effect?

Group-B (Short Answer Type Question)

Answer *any three* of the following : [5 x 3 = 15]

2. What are the difference between active and passive transducers? [5]
3. What is Data Acquisition System? What do you mean by signal conditioning in Data Acquisition System? [5]
4. Explain the role of the shunt resistor connected across PMMC. [5]
   What are the advantages of moving iron-type instruments?
5. Design the block diagram of the AF wave analyzer with a proper explanation. [5]
6. Derive the expression for deflecting torque of PMMC-type instruments. [5]

Group-C (Long Answer Type Question)

Answer *any three* of the following : [15 x 3 = 45]

7. (a) Explain static characteristic of an instrument. [5]
   (b) Write difference between accuracy and precision. [5]
   (c) How can we minimize the error in measurement? [5]
8. (a) What do you mean by the repetition rate, pulse triggering, and pulse delay in the pulse generator? [5]
   (b) What is the difference between audio and radio frequency? [5]
   (c) Explain the harmonic distortion analyzer with a proper block diagram. [5]
9. Explain the Data Acquisition system with proper schematic diagram. [15]
10. (a) Explain how a magneto-restrictive transducer works with a proper diagram [7]
    (b) Explain how a thermocouple works with a proper diagram. [8]
11. (a) How the measurement of various parameters can be done using the Lissajous figure. [9]
    (b) Draw lissajous figure obtain by x=A*sinωt and y=A*sin(ωt+pi/4) [6]

*** END OF PAPER ***