



# 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) The deflection torque in moving coil instrument is proportional to \_\_\_\_\_?
- (II) An instrument whose output is a sinusoidal voltage that varies over a complete frequency band (generally at an audio rate) slowly & continuously is referred as \_\_\_\_\_
- (III) List the various controls on the front panel of a CRO.
- (IV) Noise in transducer is added due to which reason.
- (V) Accuracy of Kelvin bridge is of the order of \_\_\_\_\_.
- (VI) What is meant by static error?
- (VII) What are the basic components of CRO?
- (VIII) The principle of operation of LVDT is based on the variation of \_\_\_\_\_
- (IX) Give one application of Maxwell Bridge?
- (X) Discuss the difference between accuracy and precision of measurement..
- (XI) What do you understand by static characteristics?
- (XII) \_\_\_\_\_ is an instrument designed to provide graphical display of the spectrum of frequencies on the CRT with amplitude of signal vs frequency.

## Group-B (Short Answer Type Question)

Answer any three of the following :

[ 5 x 3 = 15 ]

2. Suggest instrument to measure unknown frequency above 5 MHz and store result. Justify it. [5]
3. Describe the applications and limitations of Wheatstone bridge. [5]
4. Show the block diagram of a typical measurement system and indicate the functional elements in detail. [5]
5. Explain with sketches the working principle of LVDT. [5]
6. Compare between spectrum analyzer and harmonic distortion analyzer. [5]

## Group-C (Long Answer Type Question)

Answer any three of the following :

[ 15 x 3 = 45 ]

7. (a) Draw and explain in detail the shunt type Ohmmeter. [ 8 ]  
(b) Give the classification of errors and explain them. [ 7 ]
8. (a) Analyze the basic wave analyzer and explain its working principle. [ 10 ]  
(b) Discuss the frequency range of different types of signal analyzers. [ 5 ]
9. (a) Explain how the piezoelectric transducer can be used to measure force and pressure. [ 10 ]  
(b) What is a Transducer? Give the classification of transducers. [ 5 ]
10. (a) Explain how unknown inductance can be measured using Maxwell Bridge. [ 8 ]  
(b) Write short notes on data acquisition system [ 7 ]
11. (a) Explain the operation of vertical amplifier used in a CRO. [ 8 ]  
(b) Write short notes on Digital Storage oscilloscopes. [ 7 ]

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