

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name : Electrical & Electronics Measurement

Subject Code : 4TE04EEM1

Branch: B.Tech (EEE,EE)

Semester : 4

Date : 16/05/2016

Time : 02:30 To 05:30

Marks : 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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Q-1

Attempt the following questions:

(14)

- a) The material of wires used for making resistance standards is usually
 - (a) Manganin (b) Nichrome (c) copper (d) Phosphor bronze
- b) The ratio of the output to input change for a given measuring system is referred to as
 - (a) sensitivity (b) linearity (c) stability (d) none of these.
- c) The resolution of the system refer to
 - (a) Smallest change in the measured that can be measured
 - (b) True value of the input
 - (c) Retardation of the response
 - (d) None of these
- d) The input resistance of a cathode ray oscilloscope is of the order of
 - (a) Tens of ohm (b) megaohms (c) kilohms (d) fraction of an ohm
- e) The largest change in the measured variable which produces no instrument response is known as
 - (a) Threshold (b) dynamic error (c) dead zone (d) none of these
- f) The very low value of resistance is measured by using
 - (a) Kelvin double (b) wheatstone bridge (c) maxwell bridge (d) Meggar
- g) Frequency can be measured by using
 - (a) Maxwell bridge (b) schering bridge (c) Heaviside Campbell bridge
 - (d) wienbridge
- h) Maxwell's inductance – capacitance bridge is used for measurement of inductance of:
 - (a) Low Q coils (b) medium Q coils (c) high Q coils (d) none of these
- i) Owen's bridge is used for measurement of
 - (a) Low Q coil (b) high Q coil (c) Medium Q coil (d) none of these
- j) Wein bridge is used for measurement of
 - (a) 100Hz to 100Khz (b) 1Hz to 10 Hz (c) 1 Mhz (d) none of these



- k) Harmonic _____ analysers measure the total harmonic current in the waveforms.
 (a) Audio (b) distortion (c) swept (d) wave
- l) Permanent magnets are tested by
 (a) Ballistic methods (b)using an electric circuit having a mutual inductance
 (c) potentiometric methods (d) none of these
- m) High value of current measure by using
 (a) Current transformer (potential transformer (c) meggar (d) potentiometer
- n) CRO stands for
 (a) Common ray oscilloscope
 (b) Cathode ray oscilloscope
 (c) Common ratio oscilloscope
 (d) None of above

Attempt any four questions from Q-2 to Q-8

- Q-2** **Attempt all questions** **(14)**
- (a) Define the terms : **(04)**
 (a) accuracy (b) resolution (c) linearity (d) repeatability
- (b) Explain working of Maxwell bridge with its circuit diagram and phasor diagram. **(05)**
- (c) Write a short note on De Sauty's bridge. **(05)**
- Q-3** **Attempt all questions** **(14)**
- (a) Describe the working of Hay's bridge for the measurement of inductance. Derive the condition for balance and draw the phasor diagram. **(05)**
- (b) Describe and explain with the help of neat sketches the construction and working of meggar. **(05)**
- (c) Describe the loss of charge method for determination of high resistance. **(04)**
- Q-4** **Attempt all questions** **(14)**
- (a) Explain the principle and operation of Current Transformer and also the Ratio and Phase angle error. **(05)**
- (b) With the help of circuit diagram explain how capacitance can be measured by the use of a "schering bridge"? **(05)**
- (c) Enist the advantages & disadvantages of instrument transformers **(04)**
- Q-5** **Attempt all questions** **(14)**
- (a) Give the comparison between bar specimens and ring specimens in relation to magnetic measurements. **(05)**
- (b) Discuss the procedure for the determination of flux density in a ring specimen. **(05)**
- (c) Describe a method for the measurement of B-H curve of a magnetic substance of a bar form. **(04)**
- Q-6** (a) **Write short notes on any two :** **(10)**
1. Spectrum analyser
 2. Application of Instrumentation amplifier
 3. Heterodyne wave analyser
- (b) Describe the engineering applications of wave analysers. **(04)**



- Q-7** (a) **Write short notes on any two :** (10)
1. Blavier test
 2. Murray loop test
 3. Varley loop test
- (b) Explain Modulator. (04)
- Q-8** **Attempt all questions** (14)
- (a) Explain with a neat circuit diagram “ Electronic Multimeter”. (04)
- (b) Write short note on (10)
- (1) Phase angle measurement using CRO.
 - (2) Digital Voltmeter

