

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name : Electronics Instrumentation & Measurement Techniques

Subject Code : 4TE04EIM1

Branch: B.Tech (IC)

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.

- Q-1 Attempt the following questions: (14)**
- a) The use of _____ instruments is merely confined within laboratories as standardizing instruments. 01
(a) absolute (b) indicating (c) recording (d) integrating
- b) A _____ device prevents the oscillation of the moving system and enables the latter to reach its final position quickly. 01
(a) deflecting (b) controlling (c) damping (d) any of the above
- c) A universal RLC bridge uses _____. 01
(a) Maxwell bridge configuration for measurement of inductance and De Santas bridge for measurement of capacitance
(b) Maxwell Wein bridge for measurement of inductance and modified De Sauty's bridge for measurement of capacitance
(c) Maxwell Wein bridge for measurement of inductance and Wein bridge for measurement of capacitance
(d) Any of the above
- d) For measurements on high voltage capacitors, the suitable bridge is _____. 01
(a) Wein bridge (b) Modified De Santy's bridge
(c) Schering bridge (d) Any of the above
- e) Which part is called as heart of CRO? 01
A. CRT B. Sweep generator C. Trigger circuit D. Amplifier
- f) The colour of the spot on the screen of a CRO is a characteristic of _____. 01
(a) Electron gun in a CRT
(b) The type of the waveform being observed
(c) The coating material on the screen
(d) The velocity of the electrons striking the screen
- g) The dielectric loss of a capacitor can be measured by _____. 01
(a) Hay bridge (b) Schering bridge (c) Maxwell bridge (d) Anderson bridge
- h) Wagner earthing device is used to eliminate errors due to _____. 01



- (a) electrostatic coupling (b) electromagnetic coupling
(c) both (a) and (b) (d) none of the above
- i) If an inductance is connected in one arm of bridge and resistances in the remaining three arms _____ 01
(a) the bridge can always be balanced
(b) the bridge cannot be balanced
(c) the bridge can be balanced if the resistances have some specific values
(d) Any of the above
- j) Standard resistor is made from _____ material 01
(a) platinum (b) manganin (c) silver (d) nichrome
- k) AQUADAG is a _____ 01
(a) Non conductive coating on the screen of a CRT to collect the high velocity electrons
(b) Non conductive coating on the screen of a CRT to collect the secondary emission electrons
(c) Conductive coating on the screen of a CRT to collect the low velocity electrons
(d) None of these
- l) The Lissajous patterns help in the measurement of _____ 01
A. Phase difference between two sine wave
B. Frequency of one waveform if the frequency of other waveform is known
C. Both (a) and (b)
D. None of these
- m) Which of the following voltmeter have least power consumption? 01
a) Moving iron b) Hot-wire c) Induction type d) Electrostatic
- n) A moving-coil permanent-magnet instrument can be used as _____ by using a low resistance shunt. 01
(a) ammeter (b) voltmeter (c) flux-meter (d) ballistic galvanometer

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

- Q-2 Attempt all questions (14)**
a) Explain the construction, working, torque equation, advantages and disadvantages of Moving Iron instrument with neat diagram. 07
b) Explain the construction, working, torque equation, advantages and disadvantages of Electro-dynamometer type instrument with neat diagram. 07
- Q-3 Attempt all questions (14)**
a) Explain basic operation working and construction of D'Arsonval Galvanometer. 07
b) Discuss Kelvin's double bridge method for the measurement of low resistance. 07
- Q-4 Attempt all questions (14)**
a) What are the advantages of digital instruments over analog instruments? Explain the operation of a basic digital multimeter. 07
b) Explain block diagram of CRO. 07
- Q-5 Attempt all questions (14)**
a) Derive the bridge balance equation of Maxwell's bridge and also provide advantages & 07



- disadvantages of it.
- b) Explain Construction & Working of LCD. 07
- Q-6 Attempt all questions (14)**
- a) Explain the frequency measurement using Wien's bridge 07
- b) Describe the damping systems used in instruments 07
- Q-7 Attempt all questions (14)**
- a) Discuss briefly various types of digital voltmeter. 07
- b) Explain Construction and working of CRT. 07
- Q-8 Attempt all questions (14)**
- a) Explain how CRO can be used to measure different types of signal? 07
- b) State different types of Recorder. Explain any one in detail. 07

