Enrollment No: _____ Exam Seat No: _____

C.U.SHAH UNIVERSITY

Summer Examination-2017

Subject Name: Electrical & Electronics Measurement

Subject Code: 4TE04EEM1 Branch: B.Tech (Electrical)

Semester: 4 Date: 11/05/2017 Time: 02:00 To 05:00 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) Wattmeter has two coils namely…….
a) Wattmeter has two coils namely b)Voltage and resistance coil
c)Voltage and current coild)Pressure and resistance coil

b) Basically a potentiometer is a device for
a) comparing two voltages b) measuring a current
c) comparing two currentsd) none of above

c) For measurements on high voltage capacitors, the suitable bridge is
a) Wein bridge b) Modified De Sauty's bridge
c) Schering bridge d) any of above

d) The multiplier and the meter coil in a voltmeter are in
a) series b) parallel
c) series-paralleld) none of above

e) The operating voltage of a meggar is about
a) 6 V b) 12 V
c) 40 V d) 100 V

f) Standard resistor is made from
a) maganin b) platinum
c) silver d) copper

g) Most sensitive Galvanometer is
a) elastic galvanometerb) vibration galvanometer
c) spot ballistic galvanometerd) none of above

h) The pointer of an indicating instrument should be
a) very light b) very heavy
c) either A) or B) d) neither A) or B)

i) In majority of instruments damping is provided by
a) fluid friction b) spring
c) eddy current d)both A) and B)

j) To avoid the effect of stray magnetic field in A.C. bridges we can use
a) magnetic screening b) Wagner earthing device
c) wave filters d) none of above

k) Define: Repeatability

l) Define: Accuracy

m) What is the use of De Sauty's Bridge?

n) What is the unit of energy measured by energy meter?

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

Q-2 **Attempt all questions** **(14)**

(a) Explain Maxwell's bridge for measurements of unknown inductance. Determine condition for balance. **07**

(b) Explain the Schering bridge in details. **07**

Q-3 **Attempt all questions** **(14)**

(a) Explain with the help of neat diagram the working of a digital voltmeter. **07**

(b) What is effect of change in burden & burden power factor on the ratio & phase angle of PTs? **07**

Q-4 **Attempt all questions** **(14)**

(a) What are the difficulties associated with the measurement of low resistance? Describe how low resistance is measured accurately by Kelvin's double bridge. **07**

(b) Describe with the help of neat diagram the loss of charge method to determine the insulation resistance of a short length cable and derive an expression for determination of insulation resistance. **07**

Q-5 **Attempt all questions** **(14)**

(a) Explain De sauty's bridge for measurements of unknown capacitance. Determine condition for balance. **07**

(b) Which are the different A.C. bridges used for mutual inductance measurement? Explain any one in detail. **07**

Q-6 **Attempt all questions** **(14)**

(a) Explain Murray loop test and Varley loop test. **07**

(b) Explain construction & working of Meggar. **07**

Q-7 **Attempt all questions** **(14)**

(a) Explain with the help of a block diagram the working of a spectrum analyzer? Where is spectrum analyzers commonly used? **07**

(b) Explain the term "total Harmonic Distortion". Describe the functioning of a total harmonic distortion meter. **07**

Q-8 **Attempt all questions** **(14)**

(a) Draw and explain block diagram of Cathode ray oscilloscope (CRO) in brief. **07**

(b) A sheet of backellite 4.5 mm thick is tested at 50 Hz, between electrodes 0.12 m in diameter. The Schering bridge employs a standard air capacitor C_2 of 106 pF capacitance, a non-inductive resistanceR_4 of 1000/π Ω in parallel with a variable capacitor $C_4$and a non-reactive resistance R_3. Balance is obtained with C_4 = 0.5 µF & R_3=260 Ω.Calculate unknown capacitance, power factor and relative permittivity of sheet. **07**