

# C.U.SHAH UNIVERSITY

## Summer Examination-2019

Subject Name: Electrical & Electronics Measurement

Subject Code: 4TE04EEM1

Branch: B.Tech (Electrical)

Semester: 4

Date: 24/04/2019

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) Define the term: Accuracy
- b) Define the term: Precision
- c) Define the term: Reproducibility
- d) Frequency can be measured by using
  - (a) Maxwell's bridge
  - (b) Schering bridge
  - (c) Heaviside Campbell bridge
  - (d) Wien's bridge.
- e) Wattmeter has two coils namely \_\_\_\_\_
  - (a) voltage and pressure coil
  - (b) voltage and resistance coil
  - (c) voltage and current coil
  - (d) pressure and resistance coil
- f) Earth wire or ground wire is made of.....
  - (a) copper
  - (b) aluminum
  - (c) iron
  - (d) galvanized steel
- g) The use of \_\_\_\_\_ instruments is merely confined within laboratories as standardizing instruments.
  - (a) indicating
  - (b) absolute
  - (c) recording
  - (d) integrating
- h) The multiplier and the meter coil in a voltmeter are in
  - (a) series
  - (b) parallel
  - (c) series-parallel
  - (d) none of above
- i) Standard resistor is made from
  - (a) maganin
  - (b) platinum
  - (c) silver
  - (d) copper
- j) The operating voltage of a meggar is about
  - (a) 6 V
  - (b) 12 V
  - (c) 40 V
  - (d) 100 V
- k) The pointer of an indicating instrument should be
  - (a) very light
  - (b) very heavy
  - (c) either A) or B)
  - (d) neither A) or B)
- l) A moving iron instrument can be used for
  - (a) D.C. only
  - (b) A.C. only
  - (c) Both A.C. & D.C.
  - (d) None of above
- m) The unit of Ammeter Sensitivity is



(a)volt (b) ohm (c)Volt/ohm (d)ohm/volt

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 different types of errors that may occur in measurements. (07)
  - (b) Enlist the different A.C. bridges used for capacitance measurement. (07)  
Explain any one in detail.
- Q-3 Attempt all questions (14)**
- (a) Explain Maxwell's bridge for measurements of unknown inductance. (07)  
Determine condition for balance.
  - (b) What are the different methods to measure medium resistance? Explain (07)  
any one in detail.
- Q-4 Attempt all questions (14)**
- (a) Explain construction & working of Meggar. (07)
  - (b) What are the difficulties associated with the measurement of low (07)  
resistance? Describe how low resistance is measured accurately by  
Kelvin's double bridge.
- Q-5 Attempt all questions (14)**
- (a) Describe with the help of neat diagram the loss of charge method to (07)  
determine the insulation resistance of a short length cable and derive an  
expression for determination of insulation resistance.
  - (b) Explain the principle and operation of Current Transformer and also (07)  
discuss the Ratio and Phase angle error.
- Q-6 Attempt all questions (14)**
- (a) Explain testing of ring specimen. (07)
  - (b) Explain the term Total Harmonic Distortion". Describe the functioning of (07)  
a total harmonic distortion meter.
- Q-7 Attempt all questions (14)**
- (a) Describe the Murray Loop test for localization of ground and short (07)  
circuit faults in cables.
  - (b) Write short note on spectrum analyser. (07)
- Q-8 Attempt all questions (14)**
- (a) How to measure time, frequency and phase angle using CRO? (07)
  - (b) Explain the principle and operation of Potential Transformer and also (07)  
discuss the Ratio and Phase angle error.

