4th Semester Back Examination 2018-19
ELECTRICAL AND ELECTRONICS MEASUREMENT
BRANCH: EEE, ELECTRICAL
Time : 3 Hours
Max Marks : 70
Q. CODE : F1007
Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right-hand margin indicate marks.

Q1   **Answer the following questions :**   **(2 x 10)**
a) Explain the term "static stiffness" and "static compliance".
b) Distinguish between fundamental and derived units.
c) In calculating voltage drop, a current of 4.37 A is recorded in a resistance of 31.27 ohm. Calculate the voltage drop across the resistor to the appropriate number of significant figures
d) Explain the use of instrument transformers.
e) Why is Wagnor ground connection useful?
f) Mention two applications of Wien Bridge.
g) Describe the term "standardization", of a d.c. potentiometer. How is the standardization done for an a.c. potentiometer?
h) Compare ballistic galvanometer and vibration galvanometer.
i) What is aquadag and why is it required?
j) What is a volt-ratio box?

Q2 **a)** Describe about different types of errors in measurement. **(5)**
     b) Explain about all the static characteristics of measurement. **(5)**

Q3 **a)** Illustrate the measurement of insulation resistance of a cable using two-wire system. **(5)**
     b) Compare the operation of Drysdale-Tinsley & Gall-Tinsley Potentiometer. **(5)**

Q4 **a)** Explain briefly the effect of galvanometer resistance on damping. **(5)**
     b) Derive the equations for balance for the bridge for measurement of low resistance. **(5)**

Q5 **a)** How is true RMS responding voltmeter is advantageous? Explain it's working. **(5)**
     b) Explain about working of CRT with detailed diagram. **(5)**

Q6   Describe the principle of working of a moving iron instrument. How are they classified. Show that this type of instrument can be used for both d.c. and a.c. measurements. **(10)**

Q7 **a)** Derive the expression of gauge factor for a metallic wire strain gauge. **(5)**
     b) A resistance, wire strain gauge with a gauge factor of 2 is bonded to a steel structural member subjected to a stress of 100 MN/m^2. The modulus of elasticity of steel is 200GN/m^2. Calculate the percentage change in the value of the gauge resistance due to the applied stress. **(5)**

Q8   **Write short answer on any TWO :**   **(5 x 2)**
     a) Ramp type DVM
     b) Construction and working of a PMMC instrument
     c) Anderson bridge