V.P. & R.P.T.P SCIENCE COLLEGE
First Internal Test
US05CELE-04

Date: 5/10/18
10:00 a.m. to 12:00 Noon
Total Marks 50

Q1: Multiple choice questions: **8 marks**

(1) A bridge is said to be balanced when the current through the detector is
- (i) minimum.
- (ii) maximum.
- (iii) high
- (iv) zero

(2) The unit of sensitivity of current meter is
- (i) μA
- (ii) mm
- (iii) mm/ μA
- (iv) μA/mm

(3) Schering bridge is used to measure capacitance of a capacitor whose phase angle is
- (i) is nearer to 90°.
- (ii) is lower than 90°.
- (iii) is equal to 90°.
- (iv) zero

(4) Dissipation factor is
- (i) reciprocal of quality factor.
- (ii) proportional to quality factor.
- (iii) reciprocal of power factor.
- (iv) None of the above.

(5) The capacitance of a capacitor is directly proportional to
- (i) distance between two plates and inversely proportional to area of each plate.
- (ii) area of each plate and inversely proportional to distance between two plates.
- (iii) directly proportional to area and distance between two plates.
- (iv) None of above

(6) The capacitance of a capacitor is given by
- (i) $C=KA\varepsilon_o/d$
- (ii) $C= KA/\varepsilon_o d$
- (iii) $C= K/A\ \varepsilon_o d$
- (iv) None of above

(7) In the construction of phototube the photosensitive material is used in construction of
- (i) Anode
- (ii) Cathode
- (iii) Grid
- (iv) Both Anode and Cathode

(8) 78XX is a ---------- regulator IC
- (i) positive voltage
- (ii) negative voltage
- (iii) neutral voltage
- (iv) None of above

Q2 : Answer in short: (Any five) **10 marks**

1. What is a bridge circuit?
2. State 3 differences between ac and dc bridge.
3. Draw impedance triangle for inductor and capacitor.
4. What are the applications of Wein bridge?
5. What are the important blocks of instrumentation system?
6. Define Transducer.
7. What are thermistors?
8. Name Asymmetrical crystalline materials?

Q3 : Describe in detail Kelvin double bridge. **8 marks**

OR

Q3(a): Explain why Maxwell bridge is unsuited for High Q coil measurement. **4 marks**

Q3(b): The ac bridge is in balance with following constants. Arm AB, R=450 Ω, arm BC, R=300 Ω in series with capacitor C=0.256 μF and arm CD unknown, arm DA R=200 Ω in series with inductor L=15.9 mH. The oscillator frequency is 1 KHz. Find the constants of arm CD. **4 marks**

Q4 : Describe in detail Hay bridge and show that it is suitable for the measurement of High Q coil. **8 marks**

OR

Q4 : Describe in detail Schering bridge and show that the dial of Schering bridge can be calibrated directly in terms of dissipation factor D. **8 marks**

Q5 : Write short note on Transducer. **8 marks**

OR

Q5 : Describe in detail LVDT. **8 marks**

Q6 : Obtain expression for sensitivity of Strain Gauge. **8 marks**

OR

Q6 : Explain fully any two characteristics of thermistors. **8 marks**

********** Best of Luck**********