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

Date: 4/10/13
3:30 to 5:00 pm
Total Marks 30

Q-1 Multiple choice questions: (Six) **6 marks**

1. In order to find thevenised voltage
   (i) battery should be short circuited
   (ii) load should be open circuited
   (iii) load should be short circuited

2. Maxwell bridge is used to find inductance of
   (i) medium Q coil
   (ii) High Q coil
   (iii) Low Q coil

3. For Schering bridge the impedance can be approximated to be equal to
   (i) resistance
   (ii) reactance
   (iii) admittance

4. The modification applied to Hay bridge to measure high Q coil is
   (i) Connecting a resistor in series to capacitor in arm 1.
   (ii) Connecting a resistor in parallel to capacitor in arm 1.
   (iii) None of 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) None of above.

6. Thermocouple transducer is an example of
   (i) active transducer
   (ii) passive transducer
   (iii) Self generating

Que-2 Answer in short: (any 3) **6 marks**

1. Draw circuit diagram of commercial Kelvin double bridge.
2. State two conditions to be satisfied simultaneously to balance an ac bridge.

3. State applications of Wein Bridge
4. State two differences between Hay bridge and Maxwell bridge?
5. Define Transducer and classify them.
6. What is function of each block of instrumentation system?

6 marks

Q-3 Derive an expression for unknown resistance using Kelvin Double Bridge.

OR

Q-3a Discuss why Maxwell bridge is unsuited for measurement of High Q coil. **2 marks**

Q-3b 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 micro Farad, 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**

Q-4 Describe in detail Schering bridge and show that the dial of Schering bridge can be calibrated directly in terms of dissipation factor D. **6 marks**

OR

Q-4 Consider the circuit with Arm 1 with capacitive reactance of 1000 Ω, Arm 2 with pure resistor of 500 Ω, Arm 3 with resistor of 1000 Ω and Arm 4 with series combination of inductor with inductive reactance of 500 Ω and resistor of 100 Ω. Determine whether or not the bridge is in complete balance? If not show two ways in which the bridge can be balanced. **6 marks**

Q-5 Explain in detail Capacitive transducer. **6 marks**

OR

Q-5 Discuss in detail working of LVDT in servo system **6 marks**

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