

26/9/19

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National Institute of Technology Delhi

Mid Semester Examinations: B.Tech

Name of Specialization: Electrical & Electronics Engg Year: Second Semester: III

Course Name: Electrical Measurements and Instrumentation Maximum Marks – 25

Course Code: EEB-202

Total Time: 2:00 Hours

Note:

- All Questions are compulsory.
- Do not write irrelevant theory and draw neat diagrams.
- Assume data where ever required.

Q1) Describe the working of Owen bridge. Derive the equations for balance and draw the phasor diagram under conditions of balance. Discuss its advantages and disadvantages. (5)

Q2) Draw the neat diagram of Anderson bridge. Deduce the equations when the bridge is under balanced condition. Explain clearly how you can measure self-inductance by using this bridge. Draw the phasor diagram of the voltages and currents of the bridge arms at balance. Discuss the advantages and disadvantages of this bridge. (5)

Q3) Describe the working of Hay's bridge for measurement of inductance. Derive the equations for balance and draw the phasor diagram under conditions of balance. Why is this bridge suited for measurement of inductance for high Q coils? Discuss its advantages and disadvantages. (5)

Q4) Describe the working along with the connection diagram of the Heaviside Campbell bridge for precise measurement of self-inductance of a coil. Deduce the formula used. (5)

Q5) The calibration range of a certain pyrometer is 300°C to 800°C . If the dead zone in it is 0.11 percent of span, determine the temperature change which might occur before it is detected. (1)

Q6) A thermometer reads 92.35°C and the static correction given in the correction curves is -0.07°C . Determine the true value of temperature. (1)

Q7) How are resistances classified? (1)

Q8) Two capacitors $150 \pm 2.4\mu\text{F}$ & $120 \pm 1.5\mu\text{F}$ are connected in parallel. Determine the limiting error of the resultant capacitance in μF & in percentage. (2)