

**Code No: 155CB****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, August - 2022****MEASUREMENTS AND INSTRUMENTATION****(Electrical and Electronics Engineering)****Time: 3 Hours****Max. Marks: 75**

**Answer any five questions**  
**All questions carry equal marks**

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- 1.a) Derive the equation for deflection if the instruments are spring controlled. In PMMC instrument.
- b) Explain the working of M. I. instrument. [8+7]
- 2.a) By utilizing Quadrant method briefly explain the working of electrostatic voltmeter with neat diagram.
- b) A moving coil instrument gives a full-scale deflection of 10mA when the potential difference across its terminal is 100mV. Calculate (i) The shunt resistance for a full-scale deflection corresponding to 100A (ii) The resistance for full-scale reading with 1000V. Calculate the power dissipation in each case. [8+7]
- 3.a) With help of a neat diagram explain the working of Crompton type DC potentiometer.
- b) Enumerate the steps used in standardization of DC potentiometer. [8+7]
- 4.a) Compare C. T with P. T.
- b) Derive the expression for ratio error of a C. T. [6+9]
- 5.a) Explain the construction, working principle of a three-phase wattmeter. What is the importance of deflecting torque in these analog instruments?
- b) Derive the torque equation for an electro-dynamometer type of wattmeter. [8+7]
- 6.a) With help of a neat diagram explain the working of Single phase induction type energy meter.
- b) Briefly discuss about the working of LPF wattmeter with help of a neat diagram. [8+7]
- 7.a) Derive the bridge balance condition for the Maxwell bridge and Schering bridge.
- b) Derive an equation for measurement of low resistance using Kelvin double bridge. [8+7]
- 8.a) Describe the principle of working and circuit diagram of a digital storage oscilloscope with help of a neat diagram.
- b) Explain the working of photo voltaic cell and photoconductive cells with suitable diagram. [8+7]

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