

B.Tech III Year I Semester (R15) Supplementary Examinations June 2018

**ELECTRICAL MEASUREMENTS**  
(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

**PART – A**  
(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- What is the use of ammeter shunt?
  - Define current sensitivity.
  - What are the limitations of Wheatstone bridge?
  - What are the disadvantages of measurement of inductance using Maxwell's bridge method?
  - List the errors in electro-dynamometer wattmeter.
  - What are the causes of creeping in energy meter?
  - What is the use of a potentiometer?
  - Mention any two sources of errors in coordinate type A.C potentiometer.
  - Mention the drawbacks of flux meter over ballistic galvanometer.
  - What is the function of ballistic galvanometer?

**PART – B**  
(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

- 2 (a) Explain the construction and working of permanent magnet moving coil instruments.  
(b) A moving coil instrument gives a full-scale deflection of 10mA when the potential across its terminals is 100mV. Calculate shunt resistance for a full-scale deflection corresponding to 100 A.

**OR**

- 3 (a) With neat diagram, explain the construction and operation of attraction type moving iron instrument.  
(b) The inductance of a moving iron instrument is given as  $L = (10+5\theta-\theta^2)\mu\text{H}$ , where  $\theta$  is the deflection in radians from zero position. The spring constant is  $12 \times 10^{-6}$  Nm/rad. Estimate deflection for a current of 5 A.

**UNIT – II**

- 4 Draw the Kelvin's double bridge circuit and explain the measurement of low resistance using this bridge.

**OR**

- 5 (a) What are the difficulties in the measurement of high resistance?  
(b) Describe in brief about the loss of charge method of measurement of high resistance.

**UNIT – III**

- 6 Explain the construction and theory of operation of dynamometer wattmeter.

**OR**

- 7 Explain the construction and operation of single phase induction type energy meter.

**UNIT – IV**

- 8 Describe the construction and working of a polar type ac potentiometer.

**OR**

- 9 Draw the diagram and explain the operation of DC Crompton's potentiometer.

**UNIT – V**

- 10 Explain in brief about the construction and operation of flux meter.

**OR**

- 11 Explain the determination of B-H loop using method of reversals.