

B.Tech III Year I Semester (R13) Supplementary Examinations June 2017

ELECTRICAL MEASUREMENTS

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- List out the types of errors in measurement.
 - What are the essential components in CRO?
 - What is DC bridge? Name any two DC bridges.
 - What two conditions must be satisfied to make an AC bridge balance?
 - What is creeping?
 - Name any four adjustments that are carried out in energy meters for correct readings.
 - Define the terms transformation ratio, nominal ratio for a CT.
 - Define ratio correction factor.
 - Give the reasons for using ring-type specimens for ballistic tests.
 - What is purpose of ballistic tests in magnetic measurements?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 Derive the torque of a moving iron instrument. Explain briefly the various errors in the moving iron instrument.

OR

- 3 Explain the internal structure of CRT with a neat diagram.

UNIT – II

- 4 Explain how the inductance is measured in terms of known capacitance using Maxwell's bridge.

OR

- 5 (a) Explain how an unknown resistance can be measured by wheatstone bridge.
 (b) A wheatstone bridge is used to measure high resistance S whose ratio arms are 10000Ω and 10Ω . The adjustable arm has a maximum value of 10000Ω . A battery of 20 V emf and negligible resistance forms the junction ratio arms to the opposite corner. What is the maximum resistance which can be measured?

UNIT – III

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

OR

- 7 (a) Explain the construction of $1 - \phi$ induction type energy meter.
 (b) Name the errors caused by the braking system in an energy meter.

UNIT – IV

- 8 Draw the phasor diagram of PT. Derive the expression for its transformation ratio and phase angle errors.

OR

- 9 Draw the equivalent circuit and phasor diagram of CT. Derive its transformation ratio.

UNIT – V

- 10 Describe the method for determination of B-H curve of a magnetic material using method of reversals.

OR

- 11 Give the construction details of flux meter.