

Code: 9A02501

R09

B.Tech III Year I Semester (R09) Supplementary Examinations June 2016

ELECTRICAL & ELECTRONIC MEASUREMENTS

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Derive an expression for the deflecting torque and angle of deflection of moving iron type of instrument.
(b) How can the range of ammeters and voltmeters be increased? Explain with suitable circuit diagrams.
- 2 (a) Draw the equivalent circuit and phasor diagrams of a current transformer. Derive expressions for ratio and phase angle errors.
(b) Explain the considerations in the design that are to be taken, when designing instrument transformers to reduce ratio and phase angle errors.
- 3 (a) How is braking torque achieved in induction type of energy meter?
(b) Explain the construction details and principle of operation of single phase dynamometer type wattmeter.
- 4 (a) What is standardization of a D.C potentiometer? Explain the working of D.C Crompton's potentiometer.
(b) What are the practical difficulties in an AC potentiometer?
- 5 (a) Draw the circuit and phasor diagrams of De-Sauty bridge to determine capacitance of an unknown capacitor.
(b) Draw the circuit and phasor diagrams of Anderson's bridge and derive the equations of balance to determine the inductance of an unknown inductor.
- 6 (a) Describe the method of determining B-H curve of a magnetic material using method of reversals.
(b) Why are magnetic measurements not as accurate as other types of measurements in electrical engineering?
- 7 (a) Comment on this Lissajous pattern that was observed in a CRO. What is the information that can be extracted from the above pattern?



- (b) Describe how voltage can be measured with a CRO.
- 8 (a) What is the function of sample rate multivibrator in a Ramp-type digital voltmeter?
(b) Explain the operation of a digital tachometer with neat diagram.
