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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.