

Code: R7221003

**R07**

B.Tech II Year II Semester (R07) Supplementary Examinations, April/May 2013

**CALIBRATION & ELECTRONIC MEASUREMENTS**

(Electronics &amp; Instrumentation Engineering)

Time: 3 hours

Max. Marks: 80

Answer any FIVE questions  
All questions carry equal marks

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- 1 (a) What is measurement and measuring instrument? Explain.  
(b) Explain direct measurement and indirect measurement. Which one is most commonly used method and why?
- 2 (a) Give the salient features of primary and secondary standards.  
(b) Describe the international, primary, secondary and working standards with suitable examples.
- 3 (a) Explain the terms:  
(i) Accuracy                      (iii) Sensitivity  
(ii) Precision                      (iv) Reproducibility  
(b) Enumerate the important features; those are to be considered, for selecting a galvanic meter for a particular work.
- 4 (a) Explain why ammeter and voltmeter are connected in series and parallel respectively.  
(b) A moving coil ammeter has a fixed shunt of  $0.02\ \Omega$  with a coil resistance of  $1\ \text{k}\Omega$  and a potential difference of 500 mV across it, full-scale deflection is obtained.  
(i) To what shunt current does this correspond.  
(ii) Calculate the value of R to give full-scale deflection when shunt current is 10 Amps and 75 Amps.  
(iii) With what value of R is 40% deflection obtained with current  $I = 100\ \text{A}$ .
- 5 (a) Discuss briefly the merits and limitations of different types of detectors used in ac bridge methods.  
(b) Describe an ac bridge which can be used for measurement of resistance and inductance of high-Q coils. Derive the condition for balance and draw the phasor diagram under conditions of balance. Give the merits and demerits of this bridge.
- 6 (a) What is meant by frequency spectrum of the signal? With help of block diagram, explain the working of a harmonic analyzer.  
(b) Draw and explain how the spectra of different signals are viewed in a spectrum analyzer.
- 7 (a) What is the difference between a CRT and CRO? Draw a neat block diagram of general purpose CRO and explain function of each block.  
(b) The deflection sensitivity of CRT is  $0.06\ \text{mm/v}$  and unknown voltage applied to the deflection plates shifts the spot by 4 mm towards the left in the horizontal direction. Determine the unknown applied voltage.
- 8 (a) Describe three types of inkless marking mechanisms used in strip chart recorder. Give their merits and demerits.  
(b) List out the different types of display devices and systems. Explain any one of them with neat diagram.

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