

II B.Tech I Semester(R05) Supplementary Examinations, May/June 2010
CALIBRATION AND ELECTRONIC MEASUREMENTS
(Instrumentation & Control Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) A 0-10A voltmeter has a guaranteed accuracy of 1.5% of full scale reading. The current measured by this instrument is 2.5A. Calculate the limiting error.
(b) Explain the significance of measurements and methods of measurements
(c) Suggest methods to minimize different types of errors? [4+8+4]
2. (a) Explain the following terms:
 - i. International ohms
 - ii. International amperes
 - iii. Absolute units
 - iv. Universal time(b) What are atomic standards for frequency and time? [8+8]
3. Write short notes on any of the THREE :
 - (a) Primary calibration
 - (b) Secondary calibration
 - (c) Direct calibration
 - (d) Indirect calibration [16]
4. (a) Explain the series type ohmmeter?
(b) A $4\frac{1}{2}$ digit voltmeter is used for voltage measurements. [8+8]
 - i. Find its resolution?
 - ii. How would 12.98V be displayed on 10V range?
 - iii. How would 0.6973 be displayed on 1V range?
 - iv. How would 0.6973 be displayed on 10V range?
5. (a) Derive an expression for balance in an Anderson's bridge. Draw the phasor diagram under balance conditions.
(b) List the advantages and disadvantages of Anderson's bridge. [10+6]
6. (a) What is the function of a gate control Flip-Flop in a frequency counter? Explain its operation.
(b) Explain how do you interface the seven-segment display to a counter. [2+6+8]
7. (a) Draw the block diagram of vertical amplifier and explain its working.
(b) Briefly summarize the characteristics of commonly used Phosphors in Cathode ray oscilloscopes. [8+8]
8. (a) Explain the different applications of spectrum analyzer.
(b) Explain the F M recording method. [8+8]
