II B.Tech II Semester Examinations,April/May 2012
CALIBRATION AND ELECTRONIC MEASUREMENTS
Electronics And Instrumentation Engineering
Time: 3 hours   Max Marks: 80
Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Draw the circuit of a Hay bridge and derive an expression for the unknown inductance and show that it is preferred for the measurement of high Q coils.

   (b) What are the sources of error in the measurement of Q of a coil. How are they taken care of?   [8+8]

2. (a) Give the standard specifications of horizontal amplifier used in a single beam CRO

   (b) Explain the spot wheel method for frequency measurement.   [8+8]

3. Write short notes on any of the **THREE**:   [16]

   (a) RMS voltmeter

   (b) AC voltmeter using half wave rectifier

   (c) Principle of DVM

   (d) Extending of ammeter ranges

4. (a) Draw the block diagram of a filter bank spectrum analyzer and explain its operation.

   (b) Write short notes on display systems.   [3+5+8]

5. (a) Distinguish between time and phase measurements?

   (b) Explain any two methods generally used to extend the frequency range of a frequency counter?   [6+5+5]

6. (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]

7. Write short notes on any THREE standards :

   (a) Resistance

   (b) Secondary standards

   (c) Capacitance

   (d) Primary standards   [16]

8. (a) Explain the importance of traceability?

(b)

SCALE READING	PRECISION VOLTAGE	CORRECTION
90	93	+3
80	82.5	+2.5
70	72.5	+2.5
60	62	+2
50	51.7	+1.7
40	41.5	+1.5
30	31	+1
20	19.7	-0.3
10	9.5	-0.5
0	0	0

For the 50 and 40 readings in the calibration chart shown above determine the instrument accuracy as a percentage of the reading and as a percentage of full scale? [8+8]

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Set No. 3

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