Unit - V

5. a) What are the advantages of digital instrument over analog instruments?

   b) What are the advantages of PLC?

   c) A 5 bit converter is used for a dc voltage range of 0-10v. Find the weight of MSB and LSB also exact range of the converter and the error. Find the error if a 10 bit converter is used.

   d) Explain successive approximation method.

OR

What is digital voltmeter? Explain their types.

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Roll No .....

EC - 303

B.E. III Semester

Examination, June 2014

Electronic Instrumentation

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

1. a) A Digital voltmeter has a read out range from 0 to 9,999 count. determine the resolution of the instrument in volt when full scale reading is 9.999v.

   b) Define Accuracy, Precision, and Linearity.

   c) A multimeter having a sensitivity of 2,000Ω/v is used for the measurement of voltage across a circuit having an output resistance of 10kΩ. The open circuit voltage of the circuit is 6V. Find the reading of multimeter when it is set to its 10v scale. Find the percentage error.

d) Explain bolometer.

OR

Explain calorimeter

Unit - II

2. a) What is the difference between Analog and Digital storage oscilloscope?

b) What is Lissajous Pattern?

c) Explain dual trace oscilloscopes with the help of block diagram.

d) A CRT has a anode voltage is 2000v and parallel deflecting plates 2cm long and 5mm apart. The screen is 30cm from the center of the plate find the input voltage required to deflect the beam through 3cm. The input voltage applied to the deflecting plates through amplifier having an over all gain 100.

OR

Explain different parts of CRO with help of block diagram.

Unit - III

3. a) Define the temperature range for :

i) RTD

ii) Thermistor

iii) Thermocouple

iv) Thermopile

b) What is piezoelectric effect?

c) Derive the expression for hay's bridge with Phasor diagram.

d) What is strain gauges? Derive the expression for it.

OR

A Thermistor has a resistance of 10kΩ at 25°C the resistance temperature coefficient is –0.05/°C a Wien's bridge oscillator uses two identical thermistor in the frequency determining part of the bridge. The value of capacitance used in the bridge is 500pf. Calculate the value of frequency of oscillator for.

i) 20°C

ii) 25°C

iii) 30°C

Frequency of oscillation is $F = 1/2 \pi RC$ HZ.

Unit - IV

4. a) What is beat frequency oscillator.

b) What are the various digital display method?

c) Explain function generator with help of block diagram.

d) Explain the theory and working of LCD and also explain the advantage of LCD.

OR

Describe the working of swept frequency generator.