POKHARA UNIVERSITY

Level: Bachelor | Semester: Fall | Year : 2014
Programme: BE | Full Marks: 100
Course: Instrumentation | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
Attempt all the questions.

1. a) Explain the component of instrumentation system and their function with block diagram. 7
   b) How can we measure the self-inductance by comparing with a standard variable capacitance? Derive the relationship. 8
2. a) In a balanced network, AB is a resistance of 100Ω in series with an inductor of 0.16H, BC and DA are non-inductive resistance of 500Ω each and CD consists of a resistance R in series with a capacity C. A potential difference of 3V at a frequency $5000/2\pi$ is applied between points A and C Determine the values of R and C. 7
   b) Explain the static characteristic of measurement system. 8
3. a) Drive the relationship between the gauge factor, strain and the Poisson's ratio. 7
   b) The output of an LVDT is connected to a 5 V voltmeter though an amplifier with a gain of 250. The voltmeter scale ha 100 divisions and the scale can be read upto $1/5^{th}$ of a division .An output of 2mVappears across 0.5mm.Calculate and determine: 8
      I. Sensitive of LVDT, and entire setup
      II. The resolution of the instrument
4. a) What is Thermopile? Explain the principle of Thermistor to measure the temperature. 7
   b) Explain the working principle of instrumentation amplifier. 8
5. a) Find the digital output of 8.217 volts input from a 4-bits Successive Approximation ADC with the reference voltage of 10 volts. 8
   b) What do you mean by the term telemetry? Explain the types of landline. 7

6. a) With the help of necessary diagram, explain the working principle magnetic tape recorder, hence verify that it act as a differentiator.

b) Briefly explain about the digital data acquisition system.

7. Write short notes on: **(Any two)**

a) Transducer and its classification 5

b) Performance parameters. 5

c) Amplifier Applications 5