

**EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE  
EXAMINATION, JUNE 2010**

EE 04 803 – INSTRUMENTATION SYSTEMS

Time : Three Hours

Maximum : 100 Marks

*Answer all questions.*

- I. (a) Explain *one* method for humidity sensing.  
(b) Explain the working of bonded strain gauge.  
(c) Draw the circuit of differential amplifier and get its transfer function.  
(d) Describe *one* method for time measurement.  
(e) Describe the characteristics of standard distribution.  
(f) Explain combination of variances and its application.  
(g) Explain the principle of analog data acquisition system.  
(h) Get the unit impulse response for a first order system.

(8 × 5 = 40 marks)

- II. (a) What is Transducer? What are active and passive transducers? Discuss with examples.  
*Or*  
(b) Explain *one* method for the measurement of altitude and liquid level.
- III. (a) Give the circuit of instrumentation amplifier and derive the transfer function.  
*Or*  
(b) With suitable circuit diagram and waveforms, explain the principle of V/IF conversion.
- IV. (a) With suitable diagram, explain the principle of servo recorders. Where they are used?  
*Or*  
(b) How measurement errors are classified? Illustrate with arbitrary examples.
- V. (a) Write a note on SCADA.  
*Or*  
(b) What is PLC? How is it programmed and used in control? Explain PLC scanning cycle.

(4 × 15 = 60 marks)