Bachelor level/ B.E. Computer /4th Semester   Full Marks: 50
Time: 3 hours   Pass Marks: 25
Subject: Instrumentation (EL503/EL441)

- *Attempt all the questions*
- *Figures in the margin indicate full marks.*
- *Assume suitable values, with a stipulation, if necessary.*
- *Candidates are required to answer the questions in their own words as far as possible.*

1.		What are the various components of instrumentation system? Explain their functions.	[4]
2.	a)	What is systematic error? Explain its types.	[1+3]
	b)	Following readings were obtained in respect of measurement of a capacitor: 2.003, 1.998, 2.001, 2.009, 2.005, 1.991, 2.996, 1.997, 2.008 and 1.994 μF. Calculate i) standard deviation ii) probable error of one reading. iii) Probable error of mean.	[4]
3.	a)	Derive the required expression for the gauge factor for Strain Gauge.	[6]
	b)	Explain the types of sensors, classified on the base of physical principles involved.	[4]
4.		Derive the balance condition for Wheatstone bridge	[4]
5.		Explain instrumentation Amplifier with Double (two) op-amp input Stage.	[5]
6.	a)	Explain parallel type ADC with its working.	[5]
	b)	Find the successive approximation in an analog to digital output for a 4-bit converter to a 3.071 v if the reference voltage is 5volts.	[3]
7.		Explain the working of sample and hold circuit.	[4]
8.		Explain the construction and working principle of Induction type wattmeter.	[7]

THE END