

Mid-West University
Examinations Management Office
End Semester Examinations 2081

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

Full Marks: 50
Pass Marks: 25

- *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. Explain block diagram of instrumentation system. Explain different elements of components of measurement system. (4)
 2. a) Define errors in measurement. Explain the statistical analysis of errors in measurement. (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, 1.005, 2.009 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 potentiometer. (6)
b) Explain the types of general sensors. (4)
 4. Derive the balance condition for hays bridge. (4)
 5. Explain instrumentation Amplifier with Double (two) op-amp input Stage. (5)
 6. a) Explain weighted register network DAC with its working. (5)
b) Find the successive approximation in an analog to digital output for a 4-bit converter to a 3.271 v if the reference voltage is 5volts. (3)
 7. Write short note on; i) Sampling, ii) Sampling theorem, iii) Sample and hold circuit. (1+1+3)
 8. Explain types and working principles of energy meter. (6)

The End