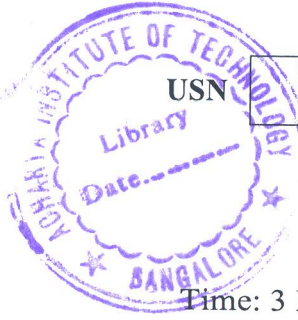


CBCS SCHEME



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15MT46

Fourth Semester B.E. Degree Examination, June/July 2019 Instrumentation and Measurement

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing
ONE full question from each module.

Module-1

- 1 a. Explain how the effect of modifying and interfering inputs is minimized/eliminated in measurement systems with examples. (08 Marks)
- b. Explain the analog and digital modes of operation of instruments. Also explain how the resolution of digital instruments can be increased. (08 Marks)

OR

- 2 a. Describe the difference between deflection and null type of instruments giving suitable examples. Discuss about their accuracy. (08 Marks)
- b. Explain primary and secondary transducers with examples. List the factors to be considered while selecting transducer. (08 Marks)

Module-2

- 3 a. Define the following terms :
i) Static error ii) scale range iii) static correction iv) signal to noise ratio. (08 Marks)
- b. Explain the phenomenon of hysteresis in measurement systems and also explain the terms 'Threshold', 'Dead zone' and 'Dead time'. (08 Marks)

OR

- 4 a. Derive an expression for time response of a 2nd order under damped system when subjected to unit ramp input and sketch the response. (08 Marks)
- b. Define : i) accuracy ii) precision iii) resolution iv) sensitivity v) linearity vi) error. (08 Marks)

Module-3

- 5 a. Explain variable capacitance transducer devices with example. (08 Marks)
- b. Explain hall effect devices with principle. Derive expression for hall field and hall velocity. (08 Marks)

OR

- 6 a. Explain thermal level sensor and optical level sensor. (08 Marks)
- b. Explain differential pressure level measurement with diagram. (08 Marks)

Module-4

- 7 a. Explain with diagram the working of resistance wire gauge. (08 Marks)
- b. Derive the balance equation for Wheatstone bridge and mention the limitation. (08 Marks)

OR

- 8 a. Explain with the diagram the working of Wagner's ground connection. (08 Marks)
- b. Describe with diagram the operation of Kelvin's bridge. (08 Marks)

Module-5

- 9 a. Define gauge factor and derive the expression for it. (08 Marks)
b. Explain construction, principle and working of LVDT. (08 Marks)

OR

- 10 a. Explain the resistance thermometer with circuit diagram. Mention its advantages and limitation. (08 Marks)
b. Draw the structure of an LED and explain its operations. (08 Marks)
