



CBCS SCHEME

15MT46

Fourth Semester B.E. Degree Examination, Jan./Feb. 2021 Instrumentation and Measurements

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain the elements of a generalized measurement system with a neat block diagram. (08 Marks)
b. Explain the different methods of correction for interfering and modifying inputs. (08 Marks)

OR

- 2 a. Explain passive and active transducers with suitable examples. (08 Marks)
b. Explain deflection and null type of instruments giving suitable examples. (08 Marks)

Module-2

- 3 Explain the phenomenon of Hysteresis, Dead time and dead zone, threshold, Linearity and Error Calibration curve. (16 Marks)

OR

- 4 a. Derive the expression for the Time domain response of a second order system to a step input and draw the magnitude response under different damping conditions. (08 Marks)
b. Derive the expression for the frequency response of a first order system. (08 Marks)

Module-3

- 5 a. What is hall effect? Describe the working, principle, construction and applications of hall effect transducers. (08 Marks)
b. Describe a digital displacement transducer. (08 Marks)

OR

- 6 Describe the Base Capacitance Probe and Teflon or Kynar coated capacitance probe with relevant diagrams. (16 Marks)

Module-4

- 7 a. Explain different types of electrical strain gauges. (08 Marks)
b. Explain the strain gauge circuit with the help of wheat-stone bridge circuit. (08 Marks)

OR

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

Module-5

- 9 a. List the factors to be considered while selecting a transducer and explain Resistive position transducer and resistance pressure transducer. (08 Marks)
b. Explain Inductive transducers and explain with sketches the operation of LVDT (Linear Variable Differential Transformer)? (08 Marks)

OR

- 10 a. Explain piezoelectric pressure transducer and its advantages and disadvantages. (08 Marks)
b. Explain the construction and working principle of LED displays. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.