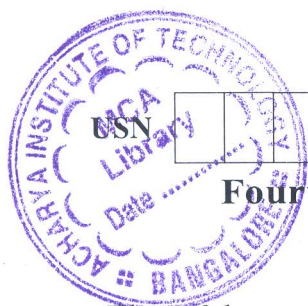


CBCS SCHEME

15MT46



Fourth Semester B.E. Degree Examination, July/August 2022 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 the functions of Instrument and Measurement Systems. (08 Marks)
b. Briefly explain the input-output configuration of measurement instruments and system. (08 Marks)

OR

- 2 a. Explain the classification of transducers in detail. (08 Marks)
b. Enumerate the analog and digital modes of operation of instruments. (08 Marks)

Module-2

- 3 a. Explain the phenomenon of "Hysteresis" in measurement. (08 Marks)
b. Define the following terms:
(i) Scale range (ii) Static error (iii) Noise ratio (iv) Static correction. (08 Marks)

OR

- 4 a. List the factors influencing the choice of transducers. (06 Marks)
b. Obtain the output expression for the setup-response of a second order system. (10 Marks)

Module-3

- 5 a. With a neat sketch explain the "Hall Effect" device operation. (08 Marks)
b. Enumerate the basic principle of "Transduction" and explain the variable capacitance transducer. (08 Marks)

OR

- 6 a. Explain the differential pressure level detector with neat diagram. (08 Marks)
b. Explain about Ultrasonic level detector and thermal level sensor. (08 Marks)

Module-4

- 7 a. Mention the factors affecting the strain gauges measurements. (06 Marks)
b. Explain the working of resistance strain gauges. (10 Marks)

OR

- 8 a. Explain the measurement of strain using "Wheatstone bridge circuit". (08 Marks)
b. Explain the following :
i) Wagner's earth connection ii) Maxwell's bridge (08 Marks)

Module-5

- 9 a. Explain with equivalent circuit the operations of "Piezoelectric transducer". (08 Marks)
b. Write a short note on :
(i) Resistance thermometer (ii) Thermistor. (08 Marks)

OR

- 10 a. Explain construction, principle and working of LVDT. (08 Marks)
b. Draw the structure of an LED and explain its operation. (08 Marks)

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.