CBCS SCHEME

USN | | | | | | | | | | |

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)**

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