CBCS SCHEME

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15MT46

Fourth Semester B.E. Degree Examination, Feb./Mar. 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 briefly the Input-Output configuration of measurements and systems. **(08 Marks)**
b. By a neat diagram, describe the elements of a generalized measurement system. **(08 Marks)**

OR

2 Describe the operation of deflection type and Null type instrument with figures (diagrams) and provide a comparison between them. **(16 Marks)**

Module-2

3 a. Mention the factors influencing the choice of transducers to be used. **(08 Marks)**
b. Obtain the expression for output of step response for a second order system. **(08 Marks)**

OR

4 Define and describe:
i) Linearity ii) Hysteresis iii) Threshold iv) Error calibration curve
v) Dead time vi) Dead zone. **(16 Marks)**

Module-3

5 Describe with necessary diagrams:
a. Bare capacitance probe **(08 Marks)**
b. Teflon or Kynar coated capacitance probe. **(08 Marks)**

OR

6 a. Briefly describe the principle of transduction and explain variable capacitance transducer. **(08 Marks)**
b. Explain 'Hall-effect' by describing the working principle and operation of a Hall effect device. **(08 Marks)**

Module-4

7 Mention the factors affecting strain gauge's measurements and explain the working of resistive strain gauge. **(16 Marks)**

OR

8 a. Explain Wein's bridge with derivation of frequency and other component values. **(08 Marks)**
b. Describe Wagner's Earth connection with procedure of operation and advantages. **(08 Marks)**

Module-5

9 a. By a neat diagram, describe the working of LVDT (Linear Variable Differential Transformer)? **(08 Marks)**
b. Explain by mentioning the factors to be considered while selecting a transducer and explain resistive position transducer. **(08 Marks)**

OR

10 a. Describe the working of an LED with neat diagrams. **(08 Marks)**
b. By an equivalent circuit explain the operation of Piezoelectric transducer. **(08 Marks)**

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