



CBCS SCHEME

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17AU35

Third Semester B.E. Degree Examination, Jan./Feb. 2021 Mechanical Measurements and Metrology

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Draw a block diagram of a Generalized measurement system. Explain function performed by each element. (10 Marks)
- b. Explain the following with neat sketches,
 - i) Imperial standard yard
 - ii) International prototype meter. (10 Marks)

OR

- 2 a. What are the different source of errors in measurement? Explain in brief. (10 Marks)
- b. Define the following terms as applied to measurement system.
 - i) Accuracy
 - ii) Precision
 - iii) Calibration
 - iv) Threshold
 - v) Repeatability (10 Marks)

Module-2

- 3 a. With a neat sketch, Describe the construction and working principle of sigma comparator. (10 Marks)
- b. Explain with a neat sketch the construction and working of LVDT. (10 Marks)

OR

- 4 a. Explain with the neat sketches the use of sin-bar for measuring known and unknown angles. (10 Marks)
- b. Sketch and explain measurement of angle using Bevel protractor. (10 Marks)

Module-3

- 5 a. Describe various mechanical detector transducer element brief. (10 Marks)
- b. With a neat sketches, explain capacitive transducers. (10 Marks)

OR

- 6 a. Explain,
 - i) Simple current sensitive circuit.
 - ii) Ballast circuit. (10 Marks)
- b. With a neat sketch, explain the working principle of an Autocollimator. (10 Marks)

Module-4

- 7 a. Sketch and explain platform balance scale for the measurement of force. (10 Marks)
- b. Sketch and explain prony brake dynamometer. (10 Marks)

OR

- 8 a. Explain construction and working principle of cathode-Ray oscilloscope with help of circuit diagram. (10 Marks)
- b. Write a short note on;
 - a) Oscillograph
 - b) X-Y plotters (10 Marks)

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Module-5

- 9 a. Write a note on;
a) Interchangability b) Selective Assembly (10 Marks)
b. What is Fits? Explain different types of fits with a neat sketches. (10 Marks)

OR

- 10 a. Write a note on:
a) Strain Gauge backing materials. b) Strain gauge sensing materials. (10 Marks)
b. With a neat sketch, explain the method of temperature measurement by optical pyrometer. (10 Marks)

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