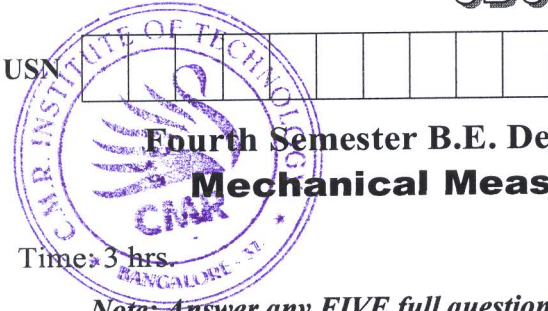


CBGS SCHEME

USN



17ME46B/17MEB406

Fourth Semester B.E. Degree Examination, June/July 2023 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. Define Metrology. What are the objectives of Metrology? (08 Marks)
- b. Explain with an example line standard and end standard. (06 Marks)
- c. Define : Accuracy, Precision and Error. (06 Marks)

OR

- 2 a. What are the difference between material standard and wavelength standard? (04 Marks)
- b. Define Meter as today. Explain international prototype meter with neat sketch. (10 Marks)
- c. Explain the working principle of sine bar. (06 Marks)

Module-2

- 3 a. Explain Johnson Microkator with neat sketch. (07 Marks)
- b. List the classifications of comparators. (03 Marks)
- c. Define Fit. Explain three types of Fits. (10 Marks)

OR

- 4 a. What are the functional requirements of comparators? (06 Marks)
- b. Explain the working principle of LVDT with neat sketch. (09 Marks)
- c. Sketch and explain Plug Gauges. (05 Marks)

Module-3

- 5 a. Explain Two wire method of measuring and effective diameter of screw thread. (07 Marks)
- b. Explain the measurement of tooth thickness of a spur gear using gear tooth vernier caliper. (07 Marks)
- c. Define : Pitch circle, Module Lead. (06 Marks)

OR

- 6 a. Explain the working of coordinate measuring machine with sketch. (10 Marks)
- b. Explain the working principle of Tool makers microscope. (10 Marks)

Module-4

- 7 a. Explain the generalized measurements system with a block diagram. (10 Marks)
- b. Define : Hysteresis, Sensitivity. (04 Marks)
- c. List the mechanical inherent (problems) associated with measurement system. (06 Marks)

OR

- 8 a. With a neat sketch explain Ballast circuit. (06 Marks)
- b. List the different types of errors in measurement system. (04 Marks)
- c. Explain x-y plotters with a neat sketch. (10 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.

Module-5

- 9 a. Classify the different types of dynamometers. Explain the working of Prony brake dynamometer. (10 Marks)
b. With a neat sketch explain McLead gauge used to measure the pressure. (07 Marks)
c. Write a note on bonding materials. (03 Marks)

OR

- 10 a. Explain Wheatstone bridge circuit for strain measurement. (06 Marks)
b. Explain the measurement of temperature using Pirani gauge. (07 Marks)
c. Write a note on Thermocouple. (07 Marks)

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