

CBCS SCHEME

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21AU42

Fourth Semester B.E. Degree Examination, Dec.2023/Jan.2024 Mechanical Measurement 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 the following : i) Threshold ii) Loading effect iii) Errors iv) Hysteresis
v) Linearity. (10 Marks)
b. Draw a block diagram of a generalized measurement system. Explain the function performed by each element. (10 Marks)

OR

- 2 a. Differentiate between primary and secondary transducer, with example. (10 Marks)
b. Explain basic principle of capacitive transducers. With a neat sketch, explain the changing dielectric constant type capacitive transducer. (10 Marks)

Module-2

- 3 a. With a neat sketch, explain the procedure to transfer from line standard to end standard. (10 Marks)
b. Define standards of measurement, and discuss the important features of wave length standards. (10 Marks)

OR

- 4 a. Differentiate between Inter-changeability and selective assembly, which is advantageous. (10 Marks)
b. Explain the following with suitable diagram:
i) Maximum clearance
ii) Minimum clearance
iii) Tolerance
iv) Basic Assembly size. (10 Marks)

Module-3

- 5 a. Write advantages and disadvantages of electrical comparator over mechanical comparator. (10 Marks)
b. What is comparator? How do they differ from measuring instruments? (04 Marks)
c. Sketch and explain solex comparators. (06 Marks)

OR

- 6 a. Explain with a neat sketch, the working of optical flats. (10 Marks)
b. Sketch and explain sine centre. (10 Marks)

Module-4

- 7 a. Sketch and explain Eddy current dynamometer. (10 Marks)
b. Sketch and explain turbine meter. (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.

OR

- 8 a. Describe the steps to be taken for preparation of specimen and mounting of strain gauges. (10 Marks)
b. Explain equal arm balance with suitable diagram and equations. (10 Marks)

Module-5

- 9 a. Describe the construction and working of optical pyrometer. (10 Marks)
b. Explain with a neat sketch, the working of McLeod gauge. (10 Marks)

OR

- 10 a. Sketch and explain Ultra-violet recorder. (10 Marks)
b. Sketch and explain coordinate measuring machine. (10 Marks)

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