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## 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)

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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