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17ME46B/17MEB406

Fourth Semester B.E. Degree Examination, June/July 2019
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. What is Metrology? What are the objectives of metrology? (07 Marks)
- h. Explain Subdivision of Standards. (08 Marks)
- c. Define Wavelength Standard. What are the advantages of wavelength standard? (05 Marks)

OR

- 2 a. Explain the Wringing Phenomena of Slip gauges. (0 Marks)
- b. With a neat sketch, explain the working of Sine bar and mention its limitations. (08 Marks)
- c. With a neat sketch, explain the working of Auto collimator. (07 Marks)

Module-2

- 3 a. Explain the principle of Interchangeability and Selective assembly. (08 Marks)
- b. With neat sketches, explain different types fit. (07 Marks)
- c. State and explain Taylor's principle of gauge design. (05 Marks)

OR

- 4 a. Define Comparator. What is the need of a comparator? (05 Marks)
- b. With a neat sketch, explain Dial Indicator. What are the advantages? (07 Marks)
- c. Sketch and explain the working of LVDT. (08 Marks)

Module-3

- 5 a. With a neat sketch, explain screw thread terminology. (06 Marks)
- b. Derive an expression for Best wire size for screw thread measurement. (07 Marks)
- c. With a neat sketch, explain the working of Tool maker's microscope. (07 Marks)

OR

- 6 a. With a neat sketch, explain Gear teeth terminology. (06 Marks)
- b. With neat sketch, explain the working of laser interferometer. (07 Marks)
- c. With a neat sketch, explain the working of co-ordinate measuring machine. (07 Marks)

Module-4

- a. Explain Generalized measurement system, with block diagram. (07 Marks)
- b. Define : i) Accuracy ii) Threshold iii) Calibration iv) Hysteresis v) Error. (05 Marks)
- c. What is Transducer? Sketch and explain the principle of Electronic Transducer. What are the advantages of Electronic transducers? (08 Marks)

OR

- 8 a. With a circuit diagram, explain Ballast circuit. (08 Marks)
- b. With a block diagram, explain Telemetry system. (06 Marks)
- c. With a neat sketch, explain stylus type Oscillography. (06 Marks)

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Module-5

- 9 a. With a neat sketch, explain working of Prony brake dynamometer. What are its limitations? (10 Marks)
b. With a neat sketch, explain McLeod gauge. (10 Marks)

OR

- 10 a. Define Strain gauge. With a neat sketch, explain wheat stone bridge circuit. (10 Marks)
b. Define Thermocouple. State the law's of thermocouple and explain. (06 Marks)
c. Write a note on :
i) Thermo couple materials ii) Advantages and disadvantages of thermocouples . (04 Marks)

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