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Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019

Metrology and Mechanical Measurements

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. What is metrology? List five objectives of metrology. (06 Marks)
b. With neat sketches explain the international prototype meter and imperial standard yard. (14 Marks)
- 2 a. Determine the dimensions and tolerances of shaft and hole having the size of 30 H7/H8 fit. Also, determine the minimum and maximum clearance. (08 Marks)
b. With a neat sketch, explain: (i) Clearance fit (ii) Interference fit (iii) Transition fit. (06 Marks)
c. What are the essential considerations in the selection of materials for gauges and what are the common materials used for gauges? (06 Marks)
- 3 a. What are the five characteristics of comparators? (05 Marks)
b. With a neat sketch, explain the working principle of Johansson Mikrokator. (08 Marks)
c. With a neat sketch, explain the working principle of LVDT. (07 Marks)
- 4 a. With a neat sketch, explain two-wire method of measuring the effective diameter of the thread. (10 Marks)
b. With a neat sketch, explain the working principle of Autocollimator. (10 Marks)

PART – B

- 5 a. With a block diagram, explain the generalized measuring system. (10 Marks)
b. Explain the types of errors in measurement and list their classification. (10 Marks)
- 6 a. With a neat sketch explain the elements of the Cathode Ray Oscilloscope (CRO). (10 Marks)
b. With a neat schematic diagram, explain ballast circuit. (10 Marks)
- 7 a. With a neat sketch explain pirani gauge. (10 Marks)
b. With a neat sketch explain the working principle of prony brake used to measure torque. (10 Marks)
- 8 a. With a neat sketch explain the working principle of optical pyrometer. (10 Marks)
b. With a neat sketch explain the construction of resistance thermometer. (10 Marks)

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