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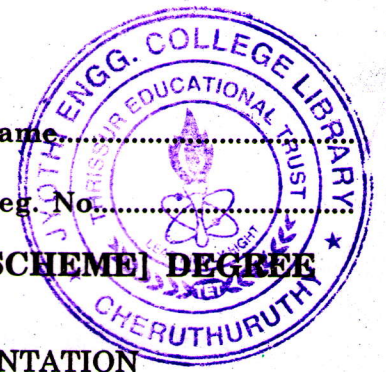
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Name.....

Reg. No.....

**SEVENTH SEMESTER B.TECH. (ENGINEERING) [09 SCHEME] DEGREE
EXAMINATION, NOVEMBER 2016**

ME/PTME 09 703—METROLOGY AND INSTRUMENTATION



Time : Three Hours

Maximum : 70 Marks

Part A

All questions are compulsory.

Each question carries 2 marks.

1. List four objectives of metrology.
2. What are the applications of strain gauges ?
3. Define temperature. How is it different from heat ?
4. What is sine bar ? How it is used for angle measurement ?
5. Define the terms accuracy and precision.

(5 × 2 = 10 marks)

Part B

Answer four questions out of six.

Each question carries 5 marks.

6. Distinguish between direct and indirect measurements. Give two examples of each.
7. Discuss the sources of errors and precautions in measurement of temperature.
8. Enumerate the advantages and disadvantages of thermistors.
9. Discuss about the field of use of machine vision systems.
10. With a neat sketch write short note on : (i) Straightness ; (ii) Squareness.
11. What is gauge factor ? Discuss its importance.

(4 × 5 = 20 marks)

Part C

12. (a) What are the various possible sources of errors in measurements ? What do you understand by systematic errors and random errors ? How the random errors are analyzed ?

Or

- (b) Explain the need of standards of measurements in the modern industrial system.

Turn over

13. (a) What is transducer ? Explain in detail about two different types of transducer with a neat sketch.

Or

- (b) Explain in detail about the construction and working of McLeod gauge.
14. (a) With the help of neat sketch, explain the construction and working of a Resistance Temperature Detectors (RTD).

Or

- (b) (i) List four thermocouple used in industry and also mention their range. (4 marks)
(ii) With a neat sketch, explain a liquid-in-glass thermometer. (6 marks)
15. (a) Explain in detail about principle of Parkinson gear tester device with a neat sketch.

Or

- (b) Explicate in detail about 3 methods of amplitude and spacing measurements based on which surface roughness parameters are classified.

[4 × 10 = 40 marks]