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BME-062

DIPLOMA IN MECHANICAL ENGINEERING (DME)

00007

Term-End Examination

June, 2014

BME-062 : METROLOGY AND INSTRUMENTATION

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt any* ***ten*** *questions. All questions carry equal marks. Use of calculator is permitted.*

1. What is metrology ? Why is it used for industrial applications ? Discuss. 7

2. Explain the meaning of precision and interchangeability. Also discuss their mutual relationships. 7

3. Describe the procedure to find the least count of a vernier caliper. What do you mean by negative error of the same ? 7

4. What is screw thread micrometer ? Discuss its applications and limitations for screw thread inspection. 7

5. Explain applications of combination set for angular measurement with its advantages. 7

6. Describe the working principle of capacitive transducer used to measure any mechanical signal. 7

7. Describe working procedure of profile projector along with its advantages. 7

8. Explain construction details of a vernier bevel protractor with the help of neat sketch. 7

9. Discuss the basic working principle of a surface roughness measuring instrument. Explain how it is different from other measuring instruments. 7

10. Explain Limit Gauges. Explain their advantages and applications in measurement. 7

11. Explain working procedure of any ***two*** of the following, with the help of sketches wherever required : 7

    (a) Radius gauge

    (b) Feeler gauge

    (c) Slip gauges

12. Explain about CLA value and RMS values as measures of surface roughness. 7

13. What is coordinate measuring machine ? Explain its advantages over other similar type of measuring instruments. 7

14. Discuss one mechanical method and one electro-mechanical method of temperature measurement. 7

15. Write a brief note on measurement of each of the following : 7

    (a) Vibrations

    (b) Frequency