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BME-062

01375

DIPLOMA IN MECHANICAL ENGINEERING

Term-End Examination

June, 2012

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. Describe the relative advantages of micrometers and vernier callipers. What is the accuracy of a hand micrometer ? 7

2. What is meant by 'accuracy' of a measuring instrument ? What is meant by magnification ? What is the difference between magnification and amplification ? 7

3. What is the application of a micrometer ? What are the limitation of measurement by a micrometer ? 7

4. What is a comparator ? Compare mechanical comparator with electrical comparator. 7

5. Why is it necessary to give a tolerance on engineering dimension ? Give an example of both the bilateral and unilateral tolerances. 7

6. Discuss the different allowance that must be taken into account in the manufacture of a gauge. 7

7. How is the inclination estimated with the help of a spirit level ? 7

8. Describe the principle and working of an autocollimator. 7

9. What are the various applications of an optical projector ? List out the advantages of an optical projector. 7

10. Discuss the applications of a tool maker's microscope. 7

11. What are the different structures that the body of a coordinate measuring machine can have ? Describe them in brief. 7

12. What is the objective of measurement of thread elements ? Mention some important thread elements of linear measurement. 7

13. The marks on the main scale of a vernier instrument are 0.25 mm apart. If the number of vernier scale divisions is 25, equal in length to 24 main scale divisions, what is the smallest reading that the instrument can make. 7

14. What is meant by calibration ? Which standards are generally used for calibration ? 7

15. What are the advantages of in-process measurement ? Describe a few instruments / machines useful for inprocess measurement. 7