Code No: 55016 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B. Tech III Year I Semester Examinations, May/June - 2015
METROLOGY AND SURFACE ENGINEERING
(Mechanical Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

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1.a) With the help of sketch describe a vernier type micrometer. How do you calculate its least count?
b) Why is it necessary to check the flatness of the measuring faces of a micrometer and explain with an example? [7+8]

2. Explain the Taylor's principle of limit gauging, with reference to gauging of rectangular holes. Discuss the effect of violating the Taylor's principle. [15]

3.a) Distinguish between straightness and flatness. List out the methods of measuring each of these.
b) Explicate the use of interferometer in measuring flatness of surfaces. [10+5]

4.a) How is the damping effect achieved in the sigma comparator? How it is different from other comparators.
b) Explain the principle of pneumatic gauging by the 'back pressure' system and State range of pressures over which it is normally used. [7+8]

5. With the help of sketch describe how tool maker's microscope can be used to measure the elements of screw threads. [15]

6.a) Distinguish between geometrical and practical tests on machine tools.
b) Explain various instruments required for performing the alignment tests on machine tools. [7+8]

7.a) What are various errors in gears? Explain, with neat figures.
b) State the various sources of errors in manufacturing of gears. [7+8]

8. Discuss different types of phosphate coatings. Give their applications. [15]

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