R09

Code No: 55016

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2016
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) Explain the salient features of British standard system of limits, fits and tolerances.
b) Explain the unilateral and bilateral tolerance system. [7+8]

2.a) Explain the Taylor's principle for the design of plain limit gauges.
b) Design a 'GO' and 'NO GO' ring gauges for the measurement of outer race of a bearing whose dimensions are $50^{\pm 0.015}$ mm. [7+8]

3.a) Explain the working principle and applications of Tool maker's microscope.
b) Describe the working principle of an Autocollimator. [7+8]

4.a) Explain working and usage of Talysurf in surface roughness measurement.
b) Explain the working principle of profilometer with neat sketch. [7+8]

5.a) Describe the working principle and advantages of electrical comparator with help of sketch.
b) Describe the salient features of Reed type mechanical comparators with suitable sketch. [7+8]

6.a) What are the different elements of a screw thread? Enlist the instruments used for the measurement of the elements of the screw thread.
b) Explain the working principle and usage of profile thread gauges. [7+8]

7.a) Explain in detail about surface texture and surface properties.
b) Write a short note on Laser applications for surface modifications. [7+8]

8.a) Explain the principle and applications of ion implantation technique.
b) Write a short note on Electro plating, electro less plating and Electro forming. [7+8]

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