B.TECH. DEGREE EXAMINATION, MAY 2016

Sixth Semester

Branch : Mechanical Engineering/Automobile Engineering

AU 010 604/ME 010 604—METROLOGY AND MACHINE TOOLS (AU, MU)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 3 marks.

1. What is Trepanning ?

2. With a sketch, show rake angle of milling cutter.

3. Write a note on gear errors.

4. Illustrate principle of sine bar.

5. How Ra value is calculated for a surface roughness profile ?

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*
Each question carries 5 marks.

6. Write a note on broaching tool.

7. How drilling is different from boaring ?

8. Describe the nomenclature of hob.

9. A 50 mm long pin having diameter 20 ± 0.02 mm, will be electroplated for a thickness of 50 ± 5 μm. Estimate the size of a GO limit gauge, neglecting the gauge to tolerances.

10. Write the importance of cut-off length in roughless measurement.

(5 × 5 = 25 marks)

Part C

Answer **all** *questions.*
Each full question carries 12 marks.

11. Describe the thread cutting mechanism in Lathe.

Or

12. Write a note on cutting tool materials use on conventional machining processes.

13. Explain cylindrical, surface and form grinding processes.

Or

14. How honing, lapping and burnishing processes differ in its features ?

15. Write a note on hobbing techniques.

Or

16. Illustrate thread whirling and thread grinding processes.

17. Explain the three basic kinds of fits based on hole basis system.

Or

18. Describe the working of a typical pneumatic comparator to check the roundness of bore of a cylinder.

19. Describe the importance of apparent and real area of contact in mating surface, by taking any two typical industrial examples.

Or

20. Sketch a typical CMM and write the features.

$(5 \times 12 = 60$ marks