G 1044   (Pages : 2)

B.TECH. DEGREE EXAMINATION, MAY 2016

Sixth Semester

Branch : Mechanical Engineering/Automobile Engineering

METROLOGY AND INSTRUMENTATION [MU]

(Old Scheme – Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours   Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 4 marks.

1. Differentiate precision and accuracy.

2. Briefly explain the term calibration.

3. Write a note on wringing of gauge blocks.

4. What is meant by circularity and roundness?

5. Discuss the first order and second order surface irregularities.

6. Define CLA index.

7. Define machine vision.

8. Why laser is preferred in engineering metrology?

9. What is the need of wheat stone bridge in strain gauge?

10. Mention the advantages of CMM.
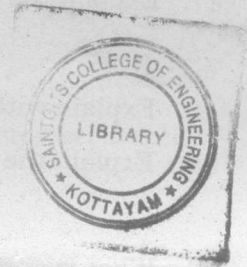
(10 × 4 = 40 marks)

Part B

Answer all questions.

Each question carries 12 marks.

11. Explain the various types of errors that are occurred during measurement.

Or

12. What are the characteristics of a good comparator? Explain the construction and working of a mechanical-optical comparator with neat sketch. Mention its advantages.

Turn over

13. Explain the construction and working of sine bar with the help of neat diagram. Mention its advantages.

Or

14. Write notes on interferometer. Explain the working principle of an optical flat to check the flatness.

15. What is SEM? Explain the working principle of SEM with the help of neat diagram. Mention its advantages over TEM.

Or

16. Briefly discuss the factors affecting the surface roughness. Explain the working of any *one* of surface roughness measurement. Mention its advantages and disadvantages.

17. Explain the working of Parkinson's gear testing machine with the help of neat sketch.

Or

18. Explain with the neat sketch of Base tangent method for checking the tooth thickness.

19. Explain the temperature measurement using thermocouple.

Or

20. What is strain gauge? Briefly explain the working of different types of strain gauge. Define load cells and mention its types.

(5 × 12 = 60 marks)