**REG.NO:**

**SEMBODAI RUKMANI VARATHARAJAN ENGINEERING COLLEGE**

**ACADEMIC YEAR 2013-2014/ODD SEMESTER**

**MODEL EXAM**

**DEPARTMENT OF MECHANICAL ENGINEERING**

**SUBJECT CODE/TITLE:** ME2304 ENGINEERING METROLOGY AND MESUREMENTS

**YEAR/SEM:** III/V **DATE:**

SET-A

**DURATION:** 180 Mins **MAX.MARKS:** 100

 **PART – A**

 (10 \* 02 = 20 marks)

 1. Define the term reliability.

 2. What are the sources of error?

 3. What are the limitations of sine bar?

 4. Name any two materials commonly used for gauges.

 5. Define effective diameter of thread.

6. State the methods used for checking gear tooth profile.

 7. What is the advantage of using laser beam in interferometry?

 8. Name the types of accuracy specifications used for CMM.

9. List any two methods used for measuring torque.

10.Give the composition and useful temperature range of any one commercial thermocouple.

 **PART- B**

 (5 \* 16 = 80 marks)

11.(a) (i) Enumerate the desirable characteristics of precision measuring instruments.(8)

 (ii) Define “systematic errors” and explain causes of those errors with examples.(8)

 (Or)

(b) (i) Explain the following terms in precision measurements: (1) Accuracy (2)Sensitivity (3)Readability (4)dynamic response. (8)

 (ii) Explain briefly the classification of various measuring methods. (8)

 12. (a) (i) Explain with neat sketches, suitable methods of measuring: (1) Diameter of a small hole upto3 mm diameter (2) Diameter of a hole upto 50 mm diameter .(3) Diameter of holes greater than 50 mm. (8)

 (ii)Discuss the relative merits and demerits of micrometer and vernier caliper. (8)

 (Or)

(b) (i) Describe optical bevel protector and explain how it is used to measure angles. (8)

 (ii)Explain the principle of working of optical comparator. (8)

13. (a) (i)With the help of neat sketch explain the principle of operation of rolling gear tester. (8)

 (ii)Discuss the merits and demerits of various roughness parameters RMS ,CLA and Rz. (8)

 (Or)

(b) (i)Derive an expression for estimation of best size wire. (8)

(ii)Describe a method used to check the flatness of a surface plate. (8)

 14. (a) (i)Explain with a neat sketch the construction and working of laser interferometer. (8)

 (ii)Describe the steps involved in checking the dimensions of a typical component using CMM. (8)

 (Or)

(b) (i) With the help of sketches explain the construction of any two types pf CMM. (8)

(ii) Discuss the merits of computer aided inspection. (8)

 15. (a) (i) Describe a method of orifice flow measurement using a suitable instrument. (8)

 (ii) Explain the method of measuring temperature of a body using electrical resistance thermister. (8)

 (Or)

(b) (i) Describe any two method used to measure very high pressure. (8)

 (ii) Explain with the help of neat sketch a method used for force measure measurement using elastic force meter. (8)