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Question Paper Code : X 60851

B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC. 2020

Fifth/Seventh Semester
Mechanical Engineering

ME 2304/ME 1304/10122 ME 505/080120044/ME 54 – ENGINEERING METROLOGY AND
MEASUREMENTS

(Common to Production Engineering)
(Regulations 2008/2010)

(Also Common to PTME2304 for B.E(Part-Time) Fourth Semester-Mechanical
Engineering-Regulations 2009)

Time : Three Hours

Answer ALL questions.

Maximum : 100 Marks
(10×2=20 Marks)

PART – A

1. What do you mean by sensitivity of a measuring instrument ?
2. Define Readability.
3. Narrate the need for comparators..
4. Differentiate between sine bar and sine center.
5. What is the difference between R_z and R_t ?
6. What are thread gauges ?
7. Define machine vision.
8. Define Straightness of axes.
9. Give the principle of hot wire anemometer.
10. What is a Kentometer ?

PART – B

(5×16=80 Marks)

11. a) What are the good practices in measurement that need to be undertaken to get eliminated by such practices good measurement results ? Give any four examples of errors which can be eliminated by such practices.

(OR)

- b) i) What are the differences between repeatability and reproducibility conditions of measurement ? (6)
- ii) Write short notes on interchangeable system of manufacturing. (10)



12. a) With a neat sketch explain the working principle of pneumatic comparator.

(OR)

b) i) What is sine bar ? How is it used for angle measurement ? (8)

ii) Explain how sine bar is used to measure angle of a component. (8)

13. a) Explain how gear tooth thickness and base tangent length is measured using vernier gear tooth caliper and flange micrometer.

(OR)

b) Explain the working principles of Gleason gear testing machine with neat sketch. Also list out its applications.

14. a) Explain the construction and working of a laser Telemetric system with a neat sketch.

(OR)

b) Explain the construction and working of various bridge type Co-ordinate Measuring Machines.

15. a) i) With a sketch explain the torque measurement using Strain Gauges. (8)

ii) Describe the construction of a hydraulic dynamometer and explain how it is used for power measurement. (8)

(OR)

b) i) With a neat sketch explain the velocity measurement using Hot wire Anemometer. (8)

ii) With a neat sketch explain the flow measurement using Pitot Tube. (8)
