Reg. No. : | | | | | | | | | | |

Question Paper Code: 46703

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Sixth Semester

Mechanical Engineering

14UME603 - ENGINEERING METROLOGY AND MEASUREMENTS

(Regulation 2014)

Duration: 1:15hrs Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. Scale sensitivity is defined as

   (a) Ratio of a change in scale reading to corresponding change in pointer deflection
   (b) Least reading of scale/range of scale
   (c) Least reading of scale/unit measurable quantity
   (d) Least count of scale/range of scale

2. Accuracy of measuring equipment is

   (a) The closeness with which a measurement can be read directly from a measuring instrument
   (b) A measure of how close the reading is to the true size
   (c) The difference between measured value and actual value
   (d) The smallest change that can be measured

3. The number of slip gauges in a set are

   (a) 87 (b) 45 (c) 31 (d) None of these

4. Plug gauges are used to

   (a) Measure the diameter of the work pieces
   (b) Measure the diameter of the holes in work pieces
   (c) Check the diameter of the holes in work pieces
   (d) Check the length of the holes in work pieces

5. Gear tooth vernier is used to measure

(a) gear tooth profile (b) gear tooth thickness
(c) pitch line thickness of gear tooth (d) module

6. Universal surface gauge is used for

(a) checking straightness (b) checking flatness
(c) checking parallelism (d) layout work and inspection

7. Optical fiber operates on the principle of

(a) Total internal reflectance (b) Tyndall effect
(c) Photo-electric effect (d) Laser technology

8. CMMs are mainly used in

(a) Design of components (b) Forward Engineering
(c) Reverse Engineering (d) Inspection of components

9. Proving ring is a device used to measure

(a) Force (b)Pressure (c)Torque (d)All the above

10. Common materials used for bi-metallic thermometer is

(a) Copper and Nickel (b) Steel and Nickel
(c) Steel and Copper (d) Copper and Aluminum

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Explain in detail various types of errors that may arise in engineering measurements and the ways to control it. (8)

12. Explain the construction and working principle of Limit Gauge with sketch. (8)

13. How to measure the specifications of the screw thread by using the tool maker's microscope? Discuss in detail. (8)

14. Explain the construction and working principle of AC laser interferometer with neat diagram. (8)

15. Discuss the working principle, advantages and disadvantages of

(i) Pitot tube (8)

(ii) Rotameter