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Question Paper Code: 56702

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2019

Sixth Semester

Mechanical Engineering

15UME602- ENGINEERING METROLOGY AND MEASUREMENTS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The degree of closeness of the measured value of a certain quantity with its true value is known as CO1- R
(a) Accuracy (b) Precision (c) Standard (d) Sensitivity
2. The maximum allowable limit of a measurement may vary from the true value is called CO1- R
(a) Permissible error (b) Expected error (c) Range of error (d) Least error
3. 'GO' and 'NO GO' gauge is a type of CO2- R
(a) Slip gauge (b) Plug gauge (c) Limit gauge (d) Ring gauge
4. Which of the following is not a type of direct measuring instrument CO2- R
(a) Micrometer (b) Divider (c) Vernier caliper (d) Tachometer
5. The tooth of the gear traces is not in the form of curved line is called CO3- R
(a) Spur gear (b) Helical gear (c) Bevel gear (d) Spiral gear
6. The pitch of the thread is uniform but it is longer or shorter to its nominal value is CO3- R
(a) Progressive error (b) Pitch error (c) Major diameter error (d) Minor diameter error
7. The alignment test is also called CO4- R
(a) Geometrical test (b) Practical test (c) Linear test (d) Angular test

8. Which one of the following is an example of contact type measuring system? CO4- R
- (a) Coordinate measuring system (b) Radiation technique
(c) Scanning laser systems (d) Machine vision system
9. The flow meter used for corrosive liquid is CO5- R
- (a) Turbine meter (b) Anemometer (c) Magnetic flow meter (d) Manometer
10. The device that uses negative temperature co-efficient for measurement of temperature is CO5- R
- (a) Thermocouple (b) Thermistor (c) Pyrometer (d) RTD

PART – B (5 x 2= 10Marks)

11. Distinguish between accuracy and precision. CO1- U
12. List the various types of linear measuring instruments. CO2- U
13. Name the various methods for measuring effective diameter. CO3- R
14. Mention the application of CMM. CO4- R
15. Define Bimetallic strip. CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) Illustrate the structure of generalized measuring system and discuss in detail. CO1- U (16)
- Or
- (b) State the purpose of calibrating the instruments and discuss the primary and secondary calibration. CO1- U (16)
17. (a) Illustrate the construction and working principles of micrometer with neat sketch. CO2- U (16)
- Or
- (b) Discuss any two types of comparator with neat sketch. CO2- U (16)
18. (a) Describe any two types of screw thread effective diameter method with neat sketch. CO3- U (16)
- Or
- (b) Explain the principle of measuring gear tooth thickness by base tangent method. CO3- U (16)

19. (a) Explain the construction and working principles of laser interferometer with neat diagram. CO4- U (16)
- Or
- (b) Describe the construction, working principle and applications of CMM to measure the form features of cylinder block. CO4- U (16)
20. (a) Explain any one method of force measurement with neat sketch. CO5- U (16)
- Or
- (b) Discuss in detail about the working principle of thermocouples in home appliances. CO5- U (16)

