A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 56702

B.E./B.Tech. DEGREE EXAMINATION, MAY 2018

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 ability by which a measuring device can detect small difference in the quantity being measured by it, is called its CO1-R

   (a) Damping (b) Sensitivity (c) Accuracy (d) Precision

3. Which of the following is not the accessory of slip gauges: CO2-R

   (a) Scribing and Centre points (b) Measuring jaws

   (c) Calipers (d) Holder

4. The lateral faces of slip gauges are at right angles correct within CO2-R

   (a) ± 1degree (b) ± 10 minutes (c) ± 30 minutes (d) ± 1 minutes

5. Which method is used to test the straightness of an object? CO3-R

(a) Indicator method (b) Interference method

(c) Wedge method (d) All of the above

6. V block is used in the workshop to check CO3-R

(a) Roundness of a cylindrical work (b) Surface roughness

(c) Taper on a job (d)None of the above

7. Which of the following is not a maturity level in CMM? CO3-R

(a) Design (b) Repeatable (c) Managed (d) Optimizing

8. In CMM, the life cycle activities of requirements analysis, design, code, and test are described in CO3-R

(a) Production engineering (b) Quality assurance

(c) Subcontract management (d) Quality management

9. Which of the following is true for bimetallic thermometer? CO3-R

(a) Two metal have same temperature coefficients (c) One metal is cooled always

(b) Two metal have different temperature coefficients (d) None of the mentioned

10. Which of the following can be used for measuring temperature? CO3-R

(a) Metallic diaphragm (b) Fluid expansion system

(c) Capsule (d) Bourdon tube

PART – B (5 x 2= 10Marks)

11. Differentiate between precision and accuracy. CO1-R

12. List any four linear measuring instruments. CO1-R

13. What are the methods used for evaluating the surface finish? CO1-R

14. Write the benefits of using CMM CO1-R

15. State the principle of operation of thermistor. CO1-R

PART – C (5 x 16= 80Marks)

16.	(a)	Draw the block diagram of a generalized measurement system and explain the various elements of measurement systems.	CO1-U	(16)
		Or		
	(b)	(i) Define error and also explain the type of errors occur during measurement.	CO1-U	(10)
		(ii) Differentiate systematic error and random errors.	CO1-U	(6)
17.	(a)	(i) Explain the reed type mechanical comparators with neat sketch.	CO2-U	(12)
		(ii) Write the advantage and disadvantage of reed type mechanical comparator.	CO2-U	(4)
		Or		
	(b)	Explain with the help of neat sketches, the working and application of an autocollimator.	CO2-U	(16)
18.	(a)	(i) Explain the terminologies related with screw thread.	CO3-U	(10)
		(ii) Briefly explain the error in thread.	CO3-U	(6)
		Or		
	(b)	Explain the any one method used in the measurement of surface finish.	CO3-U	(16)
19.	(a)	Explain the construction and working principle of laser interferometer with neat diagram.	CO4-U	(16)
		Or		
	(b)	Explain the types of CMM With neat sketch. Write the application, advantages and disadvantage of CMM.	CO4-U	(16)
20.	(a)	Explain the principle and working of orifice and venturimeter. Explain the different types of orifice plate.	CO4-U	(16)
		Or		
	(b)	Explain the construction and working of Bimetallic strip and Thermocouple.	CO4-U	(16)