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

Question Paper Code: 95704

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Fifth Semester

Mechanical Engineering

19UME504– MEASURMENTS AND INSTRUMENTATION

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The ease with which observations can be made accurately is referred to as CO1- U

   (a) readability (b) sensitivity (c) accuracy (d) precision

2. The maximum amount by which the result differs from the true value is called CO1- U

   (a) Correction (b) discrepancy (c) error (d) all of the above

3. Optical flats are made of CO2- U

   (a) Quartz (b) glass (c) plastic (d) steel

4. The two slip gauges in precision measurement are joined by CO2- U

   (a) assembling (b) sliding (c) adhesion (d) wringing

5. What is the first and the foremost step in image processing CO1- U

   (a) Image restoration (b) Image enhancement

   (c) Image acquisition (d) Segmentation

6. Which of the following is the most important element for stabilizing machine vision inspections in almost all applications? CO4- U

   (a) Processing speed (b) Illumination (c) High-resolution (d) Above all

7. Piezoelectric load cell are used for measurement in-motion weigh bridges and the principle employed is — CO5- U

(a) conversion of pressure into change of resistance

(b) conversion of pressure into generation of electrical signal

(c) conversion of pressure into change of inductance

(d) conversion of pressure into change of capacitance

8. A force can be measured by help of — CO5- U

(a) Force meter (b) spring balance (c) both a and b (d) pane balance

9. Which of the following cannot be considered as data in Data Acquisition System (DAQ)? — CO1- U

(a) Temperature (b) Mechanical displacement

(c) Flow rate (d) None of the above

10 Which one is not the type of proximity sensors — CO1- U

(a) Eddy current sensor (b) Inductive sensor

(c) Hall effect sensor (d) Capacitive sensor

PART – B (5 x 2= 10 Marks)

11 Define sensitivity — CO1- U

12 What are the advantages of pneumatic comparator?. — CO2- U

13 What is coordinate measuring machine? — CO3- U

14 Why flow measurement is important? — CO4- U

15 What is mean by tactile sensor? — CO5- R

PART – C (5 x 16= 80 Marks)

16 (a) Explain the various systematic and random errors in measurements — CO1-U — (16)

Or

(b) Explain Generalized measuring system with neat sketch. — CO1-U — (16)

17 (a) With neat sketch explain the construction and working principle of differential pneumatic comparator — CO2-U — (16)

Or

(b) With neat diagram explain the construction and working principle of depth micrometer? — CO2-U — (16)

18	(a)	List and explain the various types of CMM	CO3-U	(16)
		Or		
	(b)	How is CMM used for measuring distance between holes?	CO3-U	(16)
19.	(a)	Discuss with neat diagram on using a proving ring to measure force.	CO4-U	(16)
		Or		
	(b)	Explain the construction and working of an orifice meter	CO4-U	(16)
20.	(a)	Explain the Sensors for Displacement and Position	CO5-U	(16)
		Or		
	(b)	Write the construction and working principle of engine management system	CO5-U|	(16)

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