Reg. No.												

Question Paper Code	12637

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Fourth Semester

Mechanical Engineering

20MEPC402 – METROLOGY, MEASUREMENTS AND COMPUTER AIDED INSPECTION

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Compare precision and accuracy.	2	K2	CO1
2.	List the applications of the feeler gauge and dial indicator.	2	K1	CO1
3.	Classify the types of bevel protractors.	2	K2	CO2
4.	Define the purpose and types of limit gauges.	2	K1	CO2
5.	Name the devices used for the measurement of roundness.	2	K1	CO3
6.	Compare the parameters such as “Force” with “Torque”.	2	K2	CO3
7.	List the various types of probes used in CMM.	2	K1	CO4
8.	Name the different types of laser interferometers.	2	K2	CO4
9.	Define machine vision.	2	K1	CO5
10.	List the factors that should be considered when designing a machine vision system.	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Explain the generalized measurement system with a neat sketch and explain different stages with examples.	13	K2	CO1
		OR			
	b)	Classify the types of various comparators. Also, explain the mechanical and electrical comparators with neat sketches.	13	K2	CO1
12.	a)	Illustrate the working principle of Angle Dekker with a neat sketch and list its applications.	13	K3	CO2
		OR			
	b)	Identify the various instruments used for surface finish and explain any one method with a neat sketch.	13	K3	CO2

13. a) Summarize the following temperature sensors. *13 K2 CO3*
i) Bimetallic strip
ii) Thermocouples

OR

b) Outline the working principle of an optical pyrometer with a neat sketch and list its advantages and disadvantages. *13 K2 CO3*

14. a) Classify the types of CMM in detail and list their needs and applications. *13 K3 CO4*

OR

b) Inference the working principle of the Michelson interferometer with a neat sketch. *13 K3 CO4*

15. a) Develop the process of image sensing and acquisition in a machine vision system. *13 K3 CO5*

OR

b) Discuss how machine vision systems detect defects in products and monitor tool wear during machining. *13 K3 CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Explain any two advanced measurement techniques used in the metrology and measurement. *15 K3 CO6*

OR

b) Explain various errors observed in measuring any industrial product. *15 K3 CO6*