

CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

21AU42

Fourth Semester B.E. Degree Examination, June/July 2023 Mechanical Measurements and Metrology

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define the term "Metrology" as applied to engineering industry. State and explain the objective of metrology. (10 Marks)
b. Discuss with a block diagram, generalized Measurement system with example for each stage elements. (10 Marks)

OR

- 2 a. Explain the following : i) Hysteresis ii) Accuracy iii) Precision
iv) Sensitivity v) Repeatability. (10 Marks)
b. Explain briefly the primary and secondary transducers. (10 Marks)

Module-2

- 3 a. Describe with neat sketch :
i) Imperial standard sketch ii) Wringing phenomena. (10 Marks)
b. Using M112 set of slip gauges build the following dimensions :

Range	Steps	Pieces
1.0005	-	1
1.001 – 1.009	0.001	9
1.01 – 1.49	0.01	49
0.5 – 24.5	0.5	49
25 – 100.0	25.0	4

- i) 49.3115 ii) 68.208. (10 Marks)

OR

- 4 a. Write the comparison between Line standard and End standard. (10 Marks)
b. Write a short notes on :
i) Interchangeability and Selective assembly.
ii) Hole basis system and shaft basis system. (10 Marks)

Module-3

- 5 a. With a neat diagram, explain Solex comparator. (10 Marks)
b. What is Comparator? Give a list of various types of comparator. With a neat sketch, describe any one type of comparator. (10 Marks)

OR

- 6 a. With a neat diagram, explain the principle, construction and working of sine bar. (10 Marks)
b. With a neat diagram, explain Clinometer. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

Module-4

- 7 a. Name the different transducers and with a neat diagram, explain any one. (10 Marks)
b. With a neat diagram, explain Piezo Electric transducer. (10 Marks)

OR

- 8 a. With a neat diagram, explain Eddy current dynamometer. (10 Marks)
b. Write a note on preparation and mounting of Strain gauges. (10 Marks)

Module-5

- 9 a. With a neat diagram, explain Mcleod gauge. (10 Marks)
b. With a neat diagram, explain Optical pyrometer. (10 Marks)

OR

- 10 a. Explain with a neat sketch, Coordinate Measuring Machine (CMM). (10 Marks)
b. Write a short notes on :
i) Ultra Violet Recorders ii) Universal Measuring Machine. (10 Marks)
