

CBCS SCHEME

USN

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

17ME46B/17MEB406

Fourth Semester B.E. Degree Examination, July/August 2021 Mechanical Measurements and Metrology

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- 1
 - a. What is metrology? Explain the objectives of metrology. (05 Marks)
 - b. Explain subdivision of standards. (07 Marks)
 - c. With a neat sketch, explain International prototype meter. (08 Marks)
- 2
 - a. Explain the wringing phenomena of slip gauges. (05 Marks)
 - b. With a neat sketch, explain the working of sine centre. (07 Marks)
 - c. With a neat sketch, explain the working of autocollimator. (08 Marks)
- 3
 - a. State and explain Taylor's principle of gauge design. (05 Marks)
 - b. With neat sketches, explain different types of fit. (07 Marks)
 - c. Explain the principle of interchangeability and selective assembly. (08 Marks)
- 4
 - a. Define comparator. What is the need of a comparator? (05 Marks)
 - b. Explain with a neat sketch the working principle of mechanical optical comparator. (07 Marks)
 - c. Explain with a neat sketch the working principle of solex pneumatic gauge. (08 Marks)
- 5
 - a. With a neat sketch, explain screw thread terminology. (05 Marks)
 - b. Derive an expression for measurement of effective diameter by two wire method. (07 Marks)
 - c. With a neat sketch, explain the working of Tools maker's microscope. (08 Marks)
- 6
 - a. With a neat sketch, explain gear teeth terminology. (05 Marks)
 - b. With a neat sketch, explain the working of coordinate measuring machine. (07 Marks)
 - c. With a neat sketch, explain the working of laser interferometer. (08 Marks)
- 7
 - a. Explain generalized measurement system, with a block diagram. (05 Marks)
 - b. Define:

(i) Accuracy	(ii) Calibration	(iii) Error	(iv) Threshold
(v) Hysteresis	(vi) Least count	(vii) Range	
 - c. Explain with a neat sketch, electronic transducers. (08 Marks)
- 8
 - a. With a block diagram, explain telemetering system. (05 Marks)
 - b. With a neat block, explain stylus type oscillography. (07 Marks)
 - c. With a circuit diagram, explain Ballast circuit. (08 Marks)
- 9
 - a. With a neat sketch, explain the working of prony brake dynamometer. (10 Marks)
 - b. With a neat sketch, explain McLeod gauge. (10 Marks)
- 10
 - a. Define thermocouple. State the laws of thermocouple and explain. (08 Marks)
 - b. Define strain gauge. With a neat sketch, explain Wheatstone bridge circuit. (08 Marks)
 - c. Write short notes on: (i) Thermo couple material (ii) Seebeck effect (04 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.