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17ME46B/17MEB406

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

Time: 3 hrs.

Max. Marks: 100
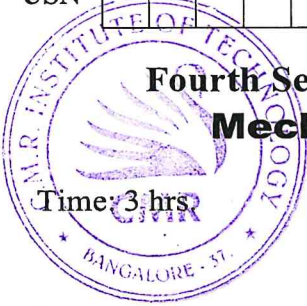
Note: Answer any FIVE full questions.

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	(07 Marks)
	c.	Explain with a neat sketch, electronic transducers.	(08 Marks)
8	a.	With a block diagram, explain telemetring 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)

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