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Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

	•	BE - SEMESTER- IV EXAMINATION – SUMMER 2020 Code: 3141901 Date:26/10/2020	
Tin	Subject Name: Mechanical Measurement and Metrology Time: 10:30 AM TO 01:00 PM Total Marks: 70 Instructions:		
		Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a) (b)	Define terms: (i) Metrology (ii) Accuracy (iii) Precision Define the following characteristics of measurement system: (i) Dead zone, (ii) Drift, (iii) Calibration, (iv) Hysteresis	03 04
	(c)	Explain generalized measurement system using suitable example.	07
Q.2	(a) (b) (c)	What do you understand by systematic errors and random errors? Why sine bar is not preferred for angles greater than 45°? Explain. Enlist methods of measurements. Explain Slip gauges with wringing process. OR	03 04 07
	(c)	Describe with neat sketch the construction and working of a micrometer.	07
Q.3	(a)	Define following terms related to screw thread measurement: (i) Lead, (ii) Pitch, (iii) Crest	03
	(b) (c)	Explain line and end standards with examples. Explain three wire method for measuring effective diameter of a thread.	04 07
		OR	0.0
Q.3	(a) (b) (c)	Write the advantages of coordinate measuring machines Explain Parkinson gear tester with a neat sketch. Describe with neat sketch the construction and use of gear tooth vernier caliper.	03 04 07
Q.4	(a) (b) (c)	Define fit and with the help of neat sketches, explain the different types of fits. Write short note on proving ring type load cell. Describe the working and construction of LVDT with neat sketch. OR	03 04 07
Q.4	(a) (b) (c)	Explain light wave length standard. Explain the working principal of pneumatic comparators with neat sketch. Explain working of McLeod gauge for pressure measurement.	03 04 07
Q.5	(a) (b) (c)	Define unilateral and bilateral tolerances. Give examples for each. Explain the terms interchangeable manufacture and interchangeable assembly. Explain optical pyrometer for measurement of temperature.	03 04 07
Q.5	(a) (b) (c)	OR How are temperatures measuring instruments classified? Explain in brief the principle of thermocouple stating illustrations. Describe the construction and working of resistance temperature detector (RTD) with neat sketch.	03 04 07
