

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV(NEW) EXAMINATION – WINTER 2022****Subject Code:3141901****Date:13-12-2022****Subject Name:Mechanical Measurement and Metrology****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

	Marks
Q.1 (a) State difference between measuring and gauging.	03
(b) Classify types of fit and explain any one of them with neat sketch.	04
(c) Explain construction and working of Autocollimator.	07
Q.2 (a) Define Joe Blocks and state material used for its fabrication & its application.	03
(b) Define Error and Explain systematic error with remedies to avoid it in measurement.	04
(c) Name the various methods used for measurement of tooth thickness and explain any one of them.	07
OR	
(c) Explain with neat sketch the working of any one type of interferometers.	07
Q.3 (a) State operating principle of pressure gauge & pressure transducer.	03
(b) Define the following term	04
i) Base Circle ii) Pitch Diameter iii) Module	
iv) Diametral pitch	
(c) Discuss the construction and working of thermocouple with neat sketch.	07
OR	
Q.3 (a) Describe briefly most commonly used forms of gear tooth.	03
(b) Explain working of optical comparators with neat sketch.	04
(c) Explain with neat sketch construction and working of the Zeiss Ultra optimeter.	07
Q.4 (a) State Desirable characteristics of strain gauge.	03
(b) State basic requirements of sine bar to get good accuracy & limitation of it.	04
(c) Draw a block diagram representation of a generalized measurement system. Identify the various elements and point out the functions performed by each element.	07
OR	
Q.4 (a) List out desirable features of a comparator.	03
(b) List type of strain gauge and explain working of any one with neat sketch.	04
(c) What is CMM? List types of CMM and explain how the linear distance can be read out with great accuracy using CMM.	07
Q.5 (a) Compare primary, secondary, tertiary and working standards.	03
(b) Define transducer. State advantage and disadvantages of electronic transducer.	04

- (c) Compare one wire, two wire and three wire methods of measuring effective diameter. **07**

OR

- Q.5** (a) Give comparison of Line standard vs End standards. **03**
(b) Explain working of eddy current dynamometer with neat sketch, **04**
(c) Explain working of rope brake dynamometer and justify its advantages over limitation. **07**
