

Code: 19ME3701

**IV B.Tech - I Semester – Regular Examinations - DECEMBER 2022**

**MEASUREMENTS AND METROLOGY  
(MECHANICAL ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

- Note: 1. This question paper contains two Parts A and B.  
 2. Part-A contains 5 short answer questions. Each Question carries 2 Marks.  
 3. Part-B contains 5 essay questions with an internal choice from each unit. Each question carries 12 marks.  
 4. All parts of Question paper must be answered in one place.

BL – Blooms Level

CO – Course Outcome

**PART – A**

		BL	CO
1. a)	Explain Tolerance.	L2	CO1
1. b)	Describe Taylor 's principle.	L2	CO2
1. c)	Explain the terms pitch and flank angle of the screw.	L2	CO3
1. d)	How do you estimate RMS value of surface finish?	L2	CO4
1. e)	Define stress and strain.	L1	CO5

**PART – B**

			BL	CO	Max. Marks
<b>UNIT-I</b>					
2	a)	Discuss about primary, secondary and tertiary standards.	L2	CO1	6 M
	b)	Differentiate between hole basis system and shaft basis system.	L2	CO1	6 M

<b>OR</b>					
3	a)	Discuss about various types of errors that occur during measurement in detail.	L2	CO1	6 M
	b)	Explain the generalised measurement system and its functional elements.	L2	CO1	6 M
<b>UNIT-II</b>					
4	a)	Explain the construction and working of Tool maker's microscope with a neat diagram.	L2	CO2	6 M
	b)	Describe the construction and working of Johanson Mikrokator.	L2	CO2	6 M
<b>OR</b>					
5	a)	Explain the usage of rollers in determining taper with an example.	L2	CO2	6 M
	b)	Describe the construction and working of an electrical comparator.	L2	CO2	6 M
<b>UNIT-III</b>					
6	a)	Explain the two wire method in determining effective diameter of screw thread.	L2	CO3	6 M
	b)	Explain the construction and working of Parkinson gear tester.	L2	CO3	6 M
<b>OR</b>					
7	a)	Explain screw thread terminology with diagrammatic representation.	L2	CO3	6 M
	b)	Explain various errors that occur in gear manufacturing.	L2	CO3	6 M

<b>UNIT-IV</b>					
8	a)	Explain the construction and working of Tomlinson surface meter.	L2	CO4	6 M
	b)	Differentiate between surface roughness and surface waviness.	L2	CO4	6 M
<b>OR</b>					
9	a)	Describe the construction and working of Auto collimator.	L2	CO4	6 M
	b)	Explain ten point height method.	L2	CO4	6 M
<b>UNIT-V</b>					
10	a)	Explain the principle of electrical resistance strain gauge.	L2	CO5	6 M
	b)	Describe the construction and working of LVDT.	L2	CO5	6 M
<b>OR</b>					
11	a)	Explain the construction and working of any two devices used in speed measurement.	L2	CO5	6 M
	b)	Describe the construction and working of rotameter in flow measurement.	L2	CO5	6 M