O.P.Code:23ME0315 | R23 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. III Year I Semester Regular Examinations December-2025
METROLOGY AND MEASUREMENTS
(Mechanical Engineering)

Time: 3 Hours **Max. Marks: 70**

PART-A

(Answer all the Questions 10 x 2 = 20 Marks)

1	a	Define sensitivity.	CO1	L2	2M
	b	State Taylor's principle and elaborate each parameter in it.	CO1	L1	2M
	c	What is sine bar?What for it is used?	CO2	L2	2M
	d	Draw the BIS symbol for surface roughness.	CO3	L1	2M
	e	What are errors in threads?	CO4	L2	2M
	f	List out the elements of gear.	CO4	L1	2M
	g	List out active and passive transducers.	CO5	L2	2M
	h	Write the expression of gauge factor for a strain gauge.	CO5	L1	2M
	i	How does a torque meter work?	CO6	L2	2M
	j	List out the types of pressures.	CO6	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		Define fit. With neat sketches, describe three types of fits.	CO1	L2	10M

OR

3		Between two mating parts of 100 mm basic size, the actual interference fit is to be from 0.05mm to 0.12mm. The tolerance for hole is same as that of the tolerance for the shaft. Solve for the size of the shaft and the hole based on (i) hole basis unilateral system and ii) Shaft basis unilateral system.	CO1	L3	10M

UNIT-II

4	a	What is meant by wringing process? Describe briefly the manufacture of slip gauges.	CO2	L2	5M
	b	Discuss is procedure for buildup slip gauge blocks for required dimension.	CO2	L2	5M

OR

5		Briefly describe the construction, principle and operation of Talysurf with a neat sketch.	CO3	L2	10M

UNIT-III

6		List out the various elements that you would measure in a screw thread. Also list the instruments that are required for measuring these elements.	CO4	L2	

OR

7	a	Derive the expressions for constant chord Method.	CO4	L3	
	b	Derive the expressions for Chordal thickness method.	CO4	L3	

UNIT-IV

8	a	Define transducer. List and explain two important and closely related parts.	CO5	L1	
	b	Classify transducers. Discuss active and passive transducers with examples.	CO5	L2	

OR

9		With neat sketch discuss the working principle of Piezo-electric transducer and its advantages.	CO5	L2	

UNIT-V

10		Explain the working of load cell with a neat sketch.	CO6	L2	

OR

11	a	Discuss the Differential U-Tube Manometer in details and Derive the expression for pressure difference.	CO6	L2	
	b	List out very high pressure measuring instruments and draw with neat sketch C type Bourdon tube.	CO6	L2	

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