



PRESIDENCY UNIVERSITY

BENGALURU

Roll No.

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End - Term Examinations – May / June 2026

Date: 26 – 05- 2026

Time: 09:30am – 12:30pm

School: SOE	Program: B.Tech	
Course Code: MEC2024	Course Name: Metrology and Measurements	
Semester: IV	Max Marks: 100	Weightage: 50%

CO - Levels	C01	C02	C03	C04	C05	C06
Marks	12	12	14	14	24	24

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each Question Carries 2 Marks.

10Q x 2M=20M

1.	Classify the different types of measurement parameters.	2 Marks	L2	C01
2.	Distinguish between linear and angular measurements.	2 Marks	L2	C02
3.	A shaft of 25 mm basic size is given as 25 ± 0.02 mm. Find the tolerance.	2 Marks	L2	C03
4.	Differentiate between clearance fit and interference fit.	2 Marks	L2	C03
5.	Define dimensional metrology.	2 Marks	L1	C04
6.	Distinguish between surface metrology and process metrology.	2 Marks	L2	C04
7.	List any two devices used for measuring temperature.	2 Marks	L1	C05
8.	Mention any two applications of pyrometers.	2 Marks	L1	C05
9.	Tell about the working principle of ultrasonic flow meter.	2 Marks	L1	C06
10.	Classify the different types of obstruction methods in flow meters.	2 Marks	L2	C06

Part B

Answer the Questions.

Total Marks 80M

11.	Explain the construction and working principle of international prototype meter with a neat diagram.	10 Marks	L2	C01
Or				
12.	Describe the different subdivisions of standards with examples.	10 Marks	L2	C01
13.	Sequence the angle gauges to get an angle of $102^{\circ}8'42''$ using a 14 piece set (Degrees=1,3,9,27,41,90 Minute=1,3,9,27 Seconds=3,6,18,30) along with a diagram.	10 Marks	L3	C02
Or				
14.	Sequence the angle gauges to get an angle of $37^{\circ}9'18''$ using a 14 piece set (Degrees=1,3,9,27,41,90 Minute=1,3,9,27 Seconds=3,6,18,30) along with a diagram.	10 Marks	L3	C02
15.	In a hole and shaft assembly of 30 mm nominal size, the tolerances for hole and shaft are as specified below: Hole: 30 ± 0.02 mm ; Shaft: 30 ± 0.07 mm Determine (i) maximum and minimum clearance obtainable (ii) allowance (iii) hole and shaft tolerance (iv) MML for shaft and hole and (v) the type of fit.	10 Marks	L3	C03
Or				
16.	In a limit system, the following limits are specified to give a clearance of fit between a shaft and a hole. Hole: 50 ± 0.20 mm; Shaft: 50 ± 0.30 mm Determine (a) basic size (b) hole and shaft tolerances (c) maximum clearance and (d) minimum clearance.	10 Marks	L3	C03
17.	Illustrate the working principle of a 3D Scanner with a neat diagram.	10 Marks	L2	C04
Or				
18.	Write short notes on surface roughness parameters and their significance.	10 Marks	L2	C04
19.	Explain the construction and working principle of RTDs with a neat sketch. Mention its advantages and disadvantages.	20 Marks	L2	C05
Or				
20.	Describe the construction and working principle of pyrometers with a	20 Marks	L2	C05

	neat sketch. Mention its advantages and disadvantages.			
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21.	Discuss the construction and working principle of ultrasonic flow meter with a neat sketch. Mention its advantages and disadvantages.	20 Marks	L2	C06
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Or

22.	Explain the construction and working principle of displacement transducers with a neat sketch. List its industrial applications.	20 Marks	L2	C06
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