R18 Regulation *Subject code:2E5CB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech V Semester Supplementary Examinations, April 2026

ENGINEERING METROLOGY

(ME)

Maximum Marks: 70 Date: 27.04.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

	All the following questions carry equal marks (10X2M=20 Marks)	Marks	CO	BTL
1	Differentiate between systematic and random errors.	2M	1	L1
2	List any five methods of measurement.	2M	1	L1
3	How is a scale different from a rule?	2M	2	L1
4	Write a note on the types of micrometers.	2M	2	L1
5	Why slip gauges are called 'Johansson gauges'?	2M	3	L1
6	Define profile tolerance.	2M	3	L1
7	What is the principle of involutes measurement?	2M	4	L1
8	What is a profile meter?	2M	4	L1
9	What is drunken thread?	2M	5	L1
10	Define straightness and roundness.	2M	5	L1

Part-B

	Answer All the following questions. (5X10M=50Marks)	Marks	CO	BTL
11	Distinguish between primary, secondary, tertiary, and working standards.	10M	1	L2
	OR			
12	With an example, explain how end standards are derived from line standards.	10M	1	L2
13	Explain the working principle of a dial caliper.	10M	2	L2
	OR			
14	In a limit system, the following limits are specified for a hole and shaft assembly: $\text{Hole} = 30^{+0.02}_{+0.00}$ mm and $\text{shaft} = 30^{-0.02}_{-0.05}$ mm Determine the (a) Tolerance and (b) allowance.	10M	2	L2
15	Write the advantages and limitations of laser interferometer.	10M	3	L2
	OR			
16	Explain the measurement methodology involved in the use of optical flats.	10M	3	L2

17	Determine the effective diameter of a metric screw using the three-wire method. The following data is available: diameter of the best size wire = 0.740 mm, distance over the wires = 25.58 mm, and pitch = 1.25 mm.	10M	4	L2
	OR			
18	Discuss the three basic types of commands in programming of CMMs. .	10M	4	L2
19	Explain how a gear caliper enables an accurate measurement of chordal thickness of a spur gear.	10M	5	L2
	OR			
20	Discuss the classification of thread gauges.	10M	5	L2