Regulation R18 Subject code: 2E5CB

# TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

## B.Tech V Semester Supplementary Examinations, June/July 2023

## ENGINEERING METROLOGY

(Mechanical Engineering)

*Maximum Marks: 70* Date:06.07.2023 **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)

1 Define metrology. Explain the significance of metrology
2 List the objectives of metrology.
3 How is a scale different from a rule?
4 Write a note on the types of micrometers.
5 Why slip gauges are called 'Johansson gauges'?
6 Define profile tolerance.
7 How are standards subdivided?
8 Discuss the characteristics of line and end standards.
9 Discuss the major applications of CMMs.
10 What is the need for acceptance tests?

Part-B

Answer All the following questions (5X10M=50Marks)

11 What are the possible sources of errors in measurements? Briefly explain them. [10]

OR

12 What is the significance of calibration of slip gauges? [10]
13 How does an optical bevel protractor differ from a mechanical type? [10]

OR

14 Give the classification of comparators. [10]
15 Write a note on the various contact points used in a dial indicator. [10]

OR

16 Explain the measurement methodology involved in the use of optical flats. [10]
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. [10]

OR

18 Differentiate between two- and three-wire methods. [10]
19 Explain how a gear caliper enables an accurate measurement of chordal thickness of a spur gear. [10]

OR

20 Briefly discuss the three basic types of commands in programming of CMMs. [10]