R18 Regulation *Subject code: 2E5CB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Supplementary Examinations, December 2021

ENGINEERING METROLOGY

MECHANICAL ENGINEERING

8.7.2022

Maximum Marks: 70 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 Why is unilateral tolerance preferred over bilateral tolerance? Justify.
2 What are the limitations of interchangeable assembly?
3 List out any four angular measuring instruments used in metrology.
4 Comment about the corollaries for Taylor's principles of gauge design.
5 Give the importance of optical interferometer.
6 Give the symbolic representation of flatness of surface.
7 Distinguish between surface roughness and waviness?
8 Write a note on the adverse effects of poor surface finish.
9 What do you mean by error in screw threads?
10 Give the classification of CMM.

Part-B

Answer All the following questions. (10M X 5=50Marks)

11 a) Bring out the salient features of British standard and ISO systems of limits, fits. [5M]
b) Define fit and describe various types of fits in brief? [5M]

OR

12 a) With the help of neat sketches state the essential conditions for clearance fit and Interference fit. [5M]
b) Explain briefly the difference between the interchangeable manufacturing and selective assembly. [5M]

13 Explain the construction and working of a bevel protractor. [10M]

OR

14 Explain how tapered surface are measured using sine bar with a neat diagram. [10M]

15 Explain how flatness errors of lapped surfaces are measured with an optical flat. [10M]

OR

16 With a neat sketch explain the working principle of Auto collimator. [10M]

17 Explain the average surface roughness methods of CLA and RMS. [10M]

OR

18 Explain the construction and working of a Profilograph for surface roughness measurement. [10M]

19 Explain the working principle of mechanical comparator with a neat diagram. [10M]

OR

20 a) How alignment test is done for a drilling machine? Explain in detail. [5M]

b) State the role of CMM in measurements and list out the applications in present scenario. [5M]