R20 Regulation *Subject code: 3P6CC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, April 2026

MACHINE TOOLS AND METROLOGY

(ME)

Maximum Marks: 70 Date: 18.04.2026 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	What is the principle of working of a lathe?	2M	1	L1
2	How do you define tool life?	2M	1	L1
3	How the planer differs from a shaper?	2M	2	L1
4	Differentiate between capstan and turret lathe.	2M	2	L1
5	What do you mean by the term 'loading' in grinding wheel?	2M	3	L1
6	What do you mean by 'glazing' in grinding?	2M	3	L1
7	What is tolerance limits?	2M	4	L1
8	Write the working principle of a dial indicator.	2M	4	L1
9	What are the Tool makers microscope uses?	2M	5	L1
10	What is the angle of thread and thread pitch?	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	What is an automatic machine? State the factors, which effect the classification of automatic machines.	10M	1	L2
	OR			
12	Briefly discuss about Geometry of single point cutting tool? Also, explain the following i) rake angle ii) Clearance angle iii) cutting angle iv) lip angle, with neat sketch.	10M	1	L2
13	Briefly discuss about the different type of taper turning methods with sketches.	10M	2	L2
	OR			
14	With neat sketch explain working principle and construction of lathe.	10M	2	L2
15	A C.I. plate measuring 300mm × 100mm × 40mm is to be rough shaped along its wider face. Calculate the machining time taking approach = 25mm, over travel = 25mm, cutting speed = 12m/min, return speed = 20m/min, allowance on either side of the plate width = 5mm and feed per cycle = 1mm.	10M	3	L2
	OR			
16	Explain about types of lathe operations.	10M	3	L2

17	Explain the classifications of shaper machines.	10M	4	L2
	OR			
18	Explain in detail with neat sketches horizontal type of boring machines.	10M	4	L2
19	The heights of peak and valleys of 20 Successive points on a surface are 35, 25, 40, 22, 37, 19, 41, 21, 42, 18, 42, 24, 44, 25, 40, 18, 40, 18, 39, 21 microns respectively, measured over a length of 20mm. Determine CLA and RMS values of roughness surface.	10M	5	L2
	OR			
20	Compare and contrast unilateral and bilateral tolerance system.	10M	5	L2

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