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KAMALA INSTITUTE OF TECHNOLOGY & SCIENCE, SINGAPUR

23ME28PC503

III.B. Tech. I. Semester Regular Examinations, November- 2025

METROLOGY & MACHINE TOOLS

(ME)

Time: 3 Hours

Max. Marks: 60

Note: Question paper consists of Part-A & Part-B.

i) **Part-A** for 10M, ii) **Part-B** for 50marks

- Part A** is compulsory, consists of 10 sub questions from all units carrying equal marks.
- Part-B** consists of **10 questions** (numbered from 2 to 11) carrying **10marks** each. From each unit there are 2 questions and the students should answer one of them. Hence the student should answer **5 questions** from **Part-B**.

PART-A			
(10Marks)			
Q. No	Questions	Marks	BTL
1.a)	Define shear angle?	1M	1
1.b)	How do you specify the lathe machine?	1M	1
1.c)	How Drilling machine is specified?	1M	1
1.d)	Give the classification of boring machines?	1M	1
1.e)	What is up milling and down milling?	1M	1
1.f)	What is the disadvantage of honing?	1M	1
1.g)	Compare a unilateral and bilateral system of tolerances.	1M	2
1.h)	State Taylor's Principle.	1M	1
1.i)	What do you mean by RMS and CLA?	1M	1
1.j)	Write the different methods employed in measurement of surface finish.	1M	1
PART-B			
(50Marks)			

Q.No	Questions	Marks	BTL
2. a)	Explain Merchants forces circle diagram and derive the expressions for different forces	5M	2
b)	Explain in detail the different cutting parameters in turning operation.	5M	2
OR			
3. a)	Compare Capstan and Turret lathes with their tool layout examples.	5M	3
b)	Write short notes on lathe attachments and their applications.	5M	2
OR			
4. a)	Explain in detail the construction and working of Boring machine?	5M	2
b)	How do you carry deep hole drilling? Discuss in detail.	5M	3
OR			
5. a)	Compare shaping, slotting, and planing machines	5M	3
b)	Discuss the applications and limitations of planing machines	5M	2
OR			
6.	Explain the Indexing methods used in milling with neat sketches.	10M	3
OR			
7.	Discuss about the types of abrasives and bonds used in grinding wheel.	10M	3
OR			
8. a)	With the help of neat sketches, state the essential conditions for clearance fit and interference fit.	5M	3
b)	Explain the construction and working of a Bevel protractor.	5M	3
OR			
9.	Explain the terms Hole based system and Shaft based system? When shaft basis system is preferred compared to Hole basis system?	10M	3
OR			
10.	Explain in detail the working of Talysurf in measuring surface roughness.	10M	3
OR			
11.	Describe the CLA, RMS, and Rz methods of evaluating surface	10M	2

	roughness		
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