

**PRAGATI ENGINEERING COLLEGE: SURAMPALEM**  
**(AUTONOMOUS)**  
**III B.Tech I Semester Supplementary Examinations, May - 2024**  
**MACHINING, MACHINE TOOLS AND METROLOGY**  
**(Mechanical Engineering)**

Time: 3 hours

Max. Marks: 70 M

**Answer ONE Question from each Unit**  
**All Questions Carry Equal Marks**

Q. No.		Questions	BTL	CO	Marks
UNIT – I					
1.	a)	Explain the mechanism of chip formation in machining brittle materials.	K2	CO1	7 M
	b)	Briefly explain with neat sketch Orthogonal and oblique cutting process.	K4	CO1	7 M
OR					
2.	a)	Explain the elementary treatment of metal cutting theory.	K2	CO1	7 M
	b)	Write the characteristics of built-up edge and its effects of BUE formation.	K1	CO1	7 M
UNIT – II					
3.	a)	Is the productivity of multi-spindle machines higher compared to a single –spindle automatic lathe? Explain your answer.	K5	CO2	7 M
	b)	What are the various types of lathe? How are they classified? Explain any one type with a neat sketch.	K1	CO2	7 M
OR					
4.	a)	What types of work-holding devices are generally used in a lathe? Give the typical applications, comparative accuracies, precautions and disadvantages for each type of work-holding device.	K1	CO2	14 M
UNIT – III					
5.	a)	Describe the application and relative merits of various types of milling cutters used in milling.	K4	CO3	7 M
	b)	Explain any one indexing method on Universal Dividing Head.	K2	CO3	7 M
OR					
6.	a)	What is the difference between face milling and end milling? Explain.	K1	CO3	7 M
	b)	What are the fundamental differences in structure of a column type milling machine and knee type milling machine.	K1	CO3	7 M
UNIT – IV					
7.	a)	Explain the Taylor’s principle applied in limits.	K2	CO4	7 M
	b)	What are types of fits with necessary sketches. Where it is used?	K1	CO4	7 M

OR					
8.	a)	Explain the use of sine bar for setting a component for a given angle.	K2	CO4	7 M
	b)	Explain the construction and applications of angle slip gauges.	K2	CO4	7 M
UNIT – V					
9.	a)	Describe various methods of Numerical assessment of surface finish.	K4	CO5	7 M
	b)	Write and explain the methods used in surface roughness measurement? Explain any one type with a neat sketch.	K2	CO5	7 M
OR					
10.	a)	Discuss and explain the principle of autocollimator.	K6	CO5	8 M
	b)	Write short notes on: 1) collimators, 2) optical projector, and 3) interferometer.	K1	CO5	6 M