

Enrolment Number: _____

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.TECH MIDSEM EXAMINATION
4th SEMESTER
ACY-2023-24 (EVEN SEM)

Subject Name: 303109255 (MT)

Branch: Mechanical

Date: 31/01/2024

Time: 10:30 – 12:00 PM

Total Marks: 40

Sr. No.		Marks
Q.1 (A)	(i) Define the metal cutting process.	01
	ii) Write Tool Life Equation	01
	iii) Define Piercing process	01
	iv) Define the function of gear.	01
	v) Write the different types of gears.	01
Q1. (B)	Compulsory Question	
	1. Which of the following cutting parameters has a significant impact on tool wear? a. Cutting speed b. Feed rate c. Depth of cut d. All of the above	01
	2) What is the primary function of the rake angle in tool geometry? a. To provide strength b. To control vibrations c. To reduce friction d. To enhance cutting efficiency	01
	3) In the Merchant Circle Diagram, what does the horizontal axis represent? a. Cutting force b. Cutting speed c. Tool wear d. Chip thickness	01
	4) Which of the following thread manufacturing processes is a chip-removing process? a. Thread rolling b. Thread milling c. Thread grinding d. Thread chasing	01
	5) Which of the following is a common material used for the construction of press tools and dies? a. Aluminum b. Plastic c. Tool steel d. Copper	01
Q.2	Attempt any four (Short Questions)	12
	(1) Name Different Types of Chips and Explain any one	03
	(2) Define Orthogonal and oblique cutting. Write any two difference between them	03
	(3) Write short notes on any one thread mfg. method	03
	(4) What are the different types of press operation? Explain any one.	03
	(5) Define progressive with its application and Advantages.	03
Q.3	Attempt any two	08
	(1) Draw the net sketch diagram of Merchant circle diagram.	04
	(2) Explain Single point Cutting tool with sketch	04
	(3) Explain the different types of thread manufacturing processes.	04
Q.4	(A) During orthogonal machining with rake angle 10° rake tool, with depth of cut = 2 mm and feed rate of 0.20 mm/rev. The cutting speed is 200 m/min. The chip thickness ratio is 0.31. The vertical cutting force is 1200 N and horizontal cutting force is 650 N. Calculate the shear angle.	05
	(B) A 50 mm diameter disc is to be punched out from a carbon steel sheet 1.0 mm thick. The diameter of the die should be (Take clearance as 3% of sheet thickness).	05
	OR	
	(B) Explain the different types of cutting tool material.	05