



MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

DEPARTMENT OF MECHATRONICS

VII SEMESTER B.TECH. (MECHATRONICS)

END SEMESTER EXAMINATION

Subject: Machine Tool Technology

Subject Code: MTE 4074

Time: 3 Hrs

Date: 07 /12/2023

MAX. MARKS: 50

- ❖ Answer **ALL** the questions.
- ❖ Assume suitable data that is not provided.

Q. No.	Questions	M	CO	PO	LO	BL
1A	The useful tool life of a HSS tool machinery mild steel at 18 m/min is 3 hours. Calculate the tool life when the tool operates at 24 m/min. Assume $n=0.125$	4	2	1, 2	2	3
1B	Explain Indexable Inserts and Throw away inserts.	3	3	1, 2	2	2
1C	Illustrate the essential requirements of machine tools. Outline various factors affecting the selection of materials for machine tools.	3	3	1, 2	2	3
2A	Explain part programming in CNC machines.	4	4	1, 2	2	2
2B	Elaborate about machining center. Write the different types of machining centre. How it differs from conventional CNC milling machines?	3	4	1, 2	2	2
2C	Explain various types of chip breakers with neat sketches.	3	2	1, 2	2	2
3A	Determine the Taylors tool life equation showing the effect of speed, feed and depth of cut.	4	2	1, 2	2	3
3B	Explain briefly about inspection fixtures.	3	5	1, 2	2	2
3C	Demonstrate the provision made on latch or leaf Jig. When will press fit bushes or fixed bushes be used?	3	5	1, 2	2	3
4A	Explain minimum energy theory with a neat sketch.	5	1	1, 2	2	2
4B	Explain machinability? What is machinability index? Explain the factors effecting machinability?	3	1	1, 2	2	2
4C	Analyze the need and importance of machine tool technology in industries.	2	1	1, 2	2	4
5A	Explain any four types of drill bushes with sketch	4	5	1, 2	2	2
5B	Distinguish between the channel and box jigs.	4	5	1, 2	2	4
5C	Elaborate about 3-2-1 principle of location.	2	5	1, 2	2	2