MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

DEPARTMENT OF MECHATRONICS

VII SEMESTER B.TECH. (MECHATRONICS)
END SEMESTER MAKEUP EXAMINATION

Subject: Machine Tool Technology   Subject Code: MTE 4074

Time: 3 Hrs   **Date: /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	Describe the factors affecting tool life and give Taylor' tool life equation	4	2	1, 2	2	2
1B	Elaborate about 18-4-1 type of cutting tool material. What are "Compax tools"?	3	3	1, 2	2	2
1C	Analyze the drawbacks of "Mist method" of applying coolants. List the additives added to water to improve its properties as a cutting fluid.	3	3	1, 2	2	4
2A	Diagnose common faults and remedies found in CNCs.	4	4	1, 2	2	4
2B	Elaborate about the various types of MCU used in CNC machines.	3	4	1, 2	2	2
2C	Explain the conditions for producing continuous chips?	3	2	1, 2	2	2
3A	Analyze the factors influence the formation of the built up edge and give the factors to decrease the built up edge.	4	2	1, 2	2	4
3B	Explain the function of mandrels in turning fixture. Mention the application of turning fixture.	3	5	1, 2	2	2
3C	Elaborate about the design principles for jigs and fixtures.	3	5	1, 2	2	2
4A	Draw a Merchants circle diagram and derive expressions to show relationships among the different forces acting on the cutting tool and different parameters involved in metal cutting	5	1	1, 2	2	2
4B	Distinguish ASA system and ORS system. Show the inter relationship equations between ASA and ORS system.	3	1	1, 2	2	4
4C	Explain 'tool designation' or 'tool signature'.	2	1	1, 2	2	2
5A	What is meant by clamping? Explain the principle involved in the design of clamp?	4	5	1, 2	2	2
5B	Distinguish between a pot jig and a box jig.	4	5	1, 2	2	4
5C	Illustrates the primary function of a linear bushing. Name any two materials commonly used in jigs and fixture and their hardness range.	2	5	1, 2	2	3