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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 2023

MACHINE TOOLS

[Maximum Marks : 75] [Time : 3 hours]

PART–A

I. Answer **all** the following questions in one word or sentence. Each question carries 1 mark.

(9x1=9 marks)

		Module Outcome	Cognitive level
1	Name the type of chip formed while machining with brittle materials.	M 1.01	R
2	The ease with which a given material may be worked with a machine tool is called…….	M 1.03	U
3	Name the lathe operation used to emboss a diamond shaped pattern on the surface of a workpiece.	M1.05	R
4	The length of the stroke of a shaper merely indicates the…….. of shaper.	M2.01	U
5	Name the drilling machine operation used to cut internal threads by means of a cutting tool called a tap.	M2.04	R
6	The extension of the machine spindle in a milling machine on which milling cutters are securely mounted and rotated is called …….	M3.03	U
7	Name the abrading process used mostly for finishing round holes by means of bonded abrasive stones called hones.	M3.05	R
8	A detailed set of directions for producing a component by the NC machine is …….	M4.02	U
9	The flash point of cutting fluid should be……to eliminate the hazard of fire during machining.	M4.05	U

PART B

II. Answer **any Eight** questions from the following. Each question carries 3 marks.

(8x3=24 marks)

		Module Outcome	Cognitive level
1	Define cutting speed, feed and depth of cut.	M1.01	R
2	What are the desirable properties of cutting tool material?	M1.02	U
3	Give the specifications of a planning machine.	M2.01	R
4	Compare shaper and Planning machines.	M2.02	U
5	List the functions of the flute in a twist drill.	M2.04	U
6	Explain Gang milling with a neat sketch.	M3.01	U
7	List the different indexing methods.	M3.03	R
8	Give the advantages of CNC and NC machines over conventional machine tools.	M4.01	U
9	List the factors deciding the selection of cutting fluid.	M4.04	U
10	What are the desirable properties of cutting fluids?	M4.05	U

PART C

Answer **all** questions from the following. Each question carries 7 marks.

(6x7=42marks)

		Module Outcome	Cognitive level
III	Define Tool signature. Explain the tool signature of a single point cutting tool.	M1.02	U
	OR		
IV	If $VT^n = C$ is the Taylors Tool life equation, calculate the cutting speed that will give a tool life of 1 hour if n=0.2 and C=90.	M1.03	A
V	With a neat sketch explain the step mandrel and expansion mandrel used in the lathe.	M1.04	U
	OR		
VI	Explain taper turning by setting over the tailstock.	M1.05	U
VII	Explain the crank and slotted link quick return mechanism of a shaper with the help of a diagram.	M2.02	U
	OR		
VIII	Draw a neat sketch of the planning machine and explain the function of each part.	M2.01	U
IX	With neat sketches explain upmilling and downmilling process.	M3.01	U
	OR		
X	Draw the nomenclature of a plain milling cutter.	M3.02	U
XI	What are the advantages and limitations of centerless grinding?	M3.04	A
	OR		
XII	With a neat sketch explain the superfinishing operation.	M3.05	U
XIII	Describe the basic components of an NC machine.	M4.03	U
	OR		
XIV	State the functions of cutting fluids.	M4.05	U

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