U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February 2025 Semester End Main Examinations

Programme: B.E. **Semester: IV**
Branch: Mechanical Engineering **Duration: 3 hrs.**
Course Code: 23ME4PCMFT / 22ME4PCMFT **Max Marks: 100**
Course: Manufacturing Technology

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT - I	*CO*	*PO*	Marks
1	a)		Draw and explain the Merchants Circle diagram which involves various cutting forces during cutting of metal with cutting tool.	*CO2*	*PO1*	**10**
	b)		In orthogonal turning of a nano composite of a 50mm diameter with carbide tool the following data obtained. Rake angle 15^0 cutting speed=100 m/min, feed=0.2 mm/rev, cutting force = 180 kg, Feed force =60 kg. Calculate the shear angle, coefficient of friction shear force where chip thickness=0.3 mm.	*CO2*	*PO1*	**10**
			OR			
2	a)		How to specify the size of the lathe? Draw the neat diagram and label all the terms on it.	*CO2*	*PO1*	**04**
	b)		Explain any two work holding devices of lathe with neat sketches.	*CO1*	*PO1*	**06**
	c)		With a neat sketch explain the hydraulic mechanism of shaper machine.	*CO2*	*PO1*	**10**
			UNIT-II			
3	a)		Sketch and describe the working of a radial drilling machine	*CO1*	*PO1*	**10**
	b)		List and explain various bonding materials used in manufacturing of grinding wheels.	*CO2*	*PO1*	**10**
			OR			
4	a)		Explain the nomenclature of a standard drill bit with neat sketch.	*CO1*	*PO1*	**10**
	b)		Explain the working of a vertical milling machine with neat sketch.	*CO1*	*PO1*	**10**
			UNIT - III			
5	a)		In a closed die forging operation, metallic dies are used in the process. With relevant diagrams explain the die design parameters.	*CO2*	*PO1*	**10**

		b)	Differentiate between hot rolling and cold rolling process.	*CO1*	*PO1*	**10**
			OR			
	6	a)	List and explain the defects in forging process.	*CO1*	*PO1*	**10**
		b)	With neat sketch explain the i) Board hammer ii) Power hammer	*CO1*	*PO1*	**10**
			UNIT - IV			
	7	a)	List the variables that influence the force required to cause extrusion and also explain the same.	*CO2*	*PO1*	**10**
		b)	With neat sketch explain the explosive and electro hydraulic forming processes.	*CO2*	*PO1*	**10**
			OR			
	8	a)	Explain the difference between direct & indirect extrusion processes with the help of sketches.	*CO1*	*PO1*	**10**
		b)	Illustrate the tube-drawing process.	*CO1*	*PO1*	**10**
			UNIT - V			
	9	a)	Explain with neat diagrams any three shearing and non-shearing operations in sheet metal forming.	*CO2*	*PO1*	**12**
		b)	It is required to punch a round blank of 250 mm from a 2.5 mm thick sheet with zero shear angle on the punch. What is the required cutting tool? What is the average pressure required. If the factor of penetration is 0.3? Calculate the energy required to punch the blank. Take τs = 80MPa.	*CO2*	*PO2*	**08**
			OR			
	10	a)	With a neat sketch explain any two milling fixtures.	*CO2*	*PO1*	**10**
		b)	List & explain types of drilling jigs.	*CO2*	*PO1*	**10**

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