

U.S.N.

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

Autonomous Institute Affiliated to VTU

January / February 2025 Semester End Main Examinations

Programme: B.E.

Semester: III

Branch: Industrial Engineering and Management

Duration: 3 hrs.

Course Code: 23IM3PCMAP

Max Marks: 100

Course: Manufacturing Processes

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 a Merchant's Circle Diagram to resolve the cutting forces in Turning using a single point cutting tool.	CO1, CO2	PO1	06
		b)	What are the properties that a good cutting tool material should possess? Explain.	CO1	--	06
		c)	In a machining experiment, tool life was found to vary with the cutting speed in the following manner: <div style="display: flex; justify-content: space-around;"> <div>Cutting speed (m/min)</div> <div>Tool life (minutes)</div> </div> <div style="display: flex; justify-content: space-around;"> <div>60</div> <div>81</div> </div> <div style="display: flex; justify-content: space-around;"> <div>90</div> <div>36</div> </div> i) Identify the Tool Life equation that is to be used to find the value of exponent 'n' and the constant 'C'. ii) Find n & C.	CO3	PO2	08
			OR			
	2	a)	Identify any six key parts of a lathe and explain the function of each one of them.	CO1, CO2	PO1	06
		b)	What is the effect of heat generated while machining? Explain.	CO1	--	06
		c)	Calculate the time for drilling a hole of 20mm dia. in a workpiece 50mm thick when the cutting speed is 10mm/min and feed 0.2 mm/rev and length of approach is 4mm.	CO3	PO2	08
			UNIT - II			
	3	a)	List and explain the criteria for selection of a suitable pattern making material?	CO2	PO1	06
		b)	What are the constituents of a Moulding Sand? Explain the importance of each one of them.	CO2	PO1	06

	c)	Name and explain the importance of any four sand tests for a moulding sand.	CO2	PO1	08
		OR			
4	a)	Explain Centrifugal Casting process and its variants? When compared with Continuous Casting process explain briefly its importance?	CO2	PO1	06
	b)	What are the typical moulding problems confronted in foundry? Explain.	CO2	PO1	06
	c)	How are moulding processes classified based on the methods used? Explain each of them briefly.	CO2	PO1	08
		UNIT - III			
5	a)	What is the need for adopting NDT for inspection in metal working industry?	CO2	PO1	06
	b)	List and explain the role of process parameters of USM.	CO2	PO1	06
	c)	Explain (Any two) : i) Magnetic Particle Test ii) Eddy Current Test iii) Ultrasonic Inspection.	CO2	PO1	08
		OR			
6	a)	Explain with a neat sketch : i) Ultrasonic Testing ii) Magnetic Particle inspection.	CO2	PO1	10
	b)	Explain Electro Discharge Machining with a neat diagram. Also mention its input parameters.	CO2	PO1	10
		UNIT - IV			
7	a)	What is Arc Welding? Explain the process behind 'striking of Arc' and its sustenance?	CO2	PO1	06
	b)	Explain the metallurgical changes that take place in the metal during welding.	CO2	PO1	06
	c)	How is Resistance Welding carried out? Mention and explain its types?	CO2	PO1	08
		OR			
8	a)	Explain the principle, working and applications of TIG and Submerged Arc Welding.	CO2	PO1	10
	b)	Indicate with a neat sketch and explain the metallurgical changes that the metal undergoes in the heat affected zone in welding.	CO2	PO1	10
		UNIT - V			
9	a)	What are the applications of Forging? Describe the process with a neat sketch.	CO2	PO1	10
	b)	What are the different types of Abrasives used in Grinding?	CO2	PO1	10
		OR			
10	a)	Explain the working principle of a Hydraulic forge hammer and a press.	CO2	PO1	08
	b)	What are the common defects that occur on a forged component?	CO2	PO1	06
	c)	Discuss the classification and construction of grinding wheels. What are the selection criteria for a grinding wheel?	CO2	PO1	06
