Reg. No.															

Question Paper Code	13641

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Third Semester

Mechanical Engineering

20MEPC301 - MANUFACTURING PROCESSES

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Which of the following is a special casting technique? (a) Shell moulding (b) Die casting (c) Investment casting (d) All of the above	1	K1	CO1
2.	Which welding process uses a consumable electrode? (a) GTAW (b) SAW (c) PAW (d) LBW	1	K1	CO1
3.	Which rolling process is used to produce rails and I-beams? (a) Flat rolling (b) Shape rolling (c) Thread rolling (d) Skew rolling	1	K1	CO2
4.	Bending in sheet metal involves (a) Volume reduction (b) Shearing (c) Plastic deformation around a neutral axis (d) Frictional heating	1	K1	CO2
5.	A discontinuous chip is generally formed when: (a) Machining brittle materials (b) Machining at high speeds (c) Using a sharp tool (d) Using coolant	1	K1	CO3
6.	In Swiss type automatic lathes, the material is (a) Stationary during machining (b) Rotated at high speed without tool movement (c) Fed through a guide bushing (d) Manually controlled	1	K1	CO3
7.	In gear hobbing, the cutting tool used is a (a) Broach (b) Hob (c) Form cutter (d) Reamer	1	K1	CO4
8.	In a slotter machine, the motion of the tool is (a) Rotary (b) Horizontal (c) Vertical reciprocating (d) Diagonal	1	K1	CO4
9.	In centreless grinding, the work piece is (a) Fixed in a chuck (b) Supported between centers (c) Held by magnetic force (d) Supported by a blade and regulated by a wheel	1	K1	CO5
10.	A major limitation of machining is (a) High waste production (b) High precision (c) Slow production speed (d) Requires casting mold	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	State two applications of core in casting.	2	K1	CO1
12.	Differentiate between green sand and dry sand moulds.	2	K2	CO1
13.	Mention two test methods used to evaluate formability of sheet metal.	2	K1	CO2
14.	Define extrusion and classify its types.	2	K1	CO2
15.	Write the chip thickness ratio in metal cutting.	2	K1	CO3
16.	Write Taylor's tool life equation and explain the terms.	2	K1	CO3
17.	State the principle of gear generation.	2	K1	CO4
18.	List the difference between form and generation methods in gear cutting.	2	K2	CO4
19.	State two key features of a typical honing tool.	2	K1	CO5
20.	Mention two applications of internal grinding.	2	K1	CO5

21.		Write any two limitations of arc welding.	*2*	*K1*	*CO6*
22.		Give two reasons why welding is preferred over bolting in structural applications.	*2*	*K1*	*CO6*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Compare and contrast gas metal arc welding and gas tungsten arc welding.	*11*	*K2*	*CO1*
		OR			
	b)	Explain resistance welding and its types with applications.	*11*	*K2*	*CO1*
24.	a)	Evaluate the suitability of rod, wire, and tube drawing processes for manufacturing precision components in the aerospace or medical industries. Justify your analysis with principles, diagrams, and performance comparisons.	*11*	*K2*	*CO2*
		OR			
	b)	Describe the types of rolling and shape rolling processes with suitable illustrations.	*11*	*K2*	*CO2*
25.	a)	Classify the types of chips formed during machining and correlate each type with specific machining conditions and work piece materials.	*11*	*K2*	*CO3*
		OR			
	b)	Apply the Merchant's circle analysis to determine cutting forces in a metal cutting operation and explain its significance in tool design.	*11*	*K2*	*CO3*
26.	a)	With the help of a neat sketch, explain the principle of gear hobbing.	*11*	*K2*	*CO4*
		OR			
	b)	A gear with specific module and number of teeth is to be manufactured. Apply forming and generation methods to explain how this gear can be produced. Include examples	*11*	*K2*	*CO4*
27.	a)	Compare grinding, lapping, and honing in terms of material removal rate, surface finish, and precision.	*11*	*K2*	*CO5*
		OR			
	b)	Classify the different types of abrasives and bond types used in grinding wheels. Analyze how the selection of each type affects performance in specific grinding operations.	*11*	*K2*	*CO5*
28.	a)	Write the principle of metal cutting and turning machines to machine a cylindrical shaft with high dimensional accuracy. Explain the machine choice and justify.	*11*	*K2*	*CO6*
		OR			
	b)	State the performance and limitations of turning machines compared to milling machines for component prototyping. Support your discussion with examples.	*11*	*K2*	*CO6*