Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B.Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, NOV / DEC 2024

B.E. MECHANICAL ENGINEERING
Six
ME5073 DESIGN FOR MANUFACTURING
(Regulation 2019)

Time: 3 hrs Max. Marks: 100

CO1	Interpret the economics and design of cast components.
CO2	Design best manufacturing practices for forming of components.
CO3	Develop design principles for machining.
CO4	Formulate design consideration in the design of welded products.
CO5	Apply design consideration principles of assembly in the design of assembled products.

BL – Bloom's Taxonomy Levels
(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A (10x2=20 Marks)
(Answer all Questions)

Q.No.	Questions	Marks	CO	BL
1	What are the benefits of die casting compared to other casting processes?	2	1	1
2	Describe the process of permanent mold casting.	2	1	1
3	Explain the design considerations for metal-extruded parts.	2	2	2
4	List the design factors that need to be considered for forged parts.	2	2	1
5	What are the design considerations for turned parts?	2	3	2
6	Discuss the factors to consider when designing drilled parts.	2	3	2
7	What are the critical design considerations for resistance spot welding?	2	4	2
8	Explain the design factors that influence resistance seam welding.	2	4	2
9	Define the concept of Design for Assembly (DFA).	2	5	1
10	Why are snap fits significant in assembly design?	2	5	2

PART- B (5x 13=65 Marks)

Q.No.	Questions	Marks	CO	BL
11 (a)	Apply Design for Manufacturability (DFM) principles to optimize product design and resolve production challenges.	13	1	L3
	OR			
11 (b)	Apply design considerations in casting to resolve casting-related issues.	13	1	L3
12 (a)	Analyze the challenges and design considerations in producing impact and cold-extruded parts to improve efficiency and quality.	13	2	L4
	OR			
12 (b)	Analyze the design considerations for stamped parts and assess their impact on the stamping process.	13	2	L4

13 (a)	Utilize design features to enhance the efficiency and performance of milling cutters.	**13**	3	L3
	OR			
13 (b)	Use the machining characteristics of shaped and slotted parts to optimize tool selection.	**13**	3	L3
14 (a)	Demonstrate the impact of thermal stress on weld joints and suggest mitigation solutions.	**13**	4	L3
	OR			
14 (b)	Use the guidelines for Flash & Upset weldments to enhance weld quality and strength	**13**	4	L3
15 (a)	Assess DFM implementation in screws and rivets with a sketch.	**13**	5	L4
	OR			
15 (b)	Analyze the design requirements for components in automatic assembly systems.	**13**	5	L4

PART- C (1x 15=15 Marks)

(Q.No.16 is compulsory)

Q.No.	Questions	Marks	CO	BL
16.	Evaluate the design considerations for arc welding, focusing on cost reduction, distortion minimization, and weld strength, and justify how these factors impact welding efficiency and quality in industrial applications.	**15**	4	5