

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

M.E DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

Second Semester

Product Design and Development

PPDT2424 - Design for Manufacture and Assembly

Regulations - 2024

Duration : 3 Hrs

Maximum : 100 Marks

*PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Define the term statistical tolerance analysis.	L1	1	2
2.	Compare linear and non-linear tolerance analysis.	L2	1	2
3.	State the concept of the quadratic loss function in tolerance.	L2	2	2
4.	Summarize the principles of traditional cost-based analysis.	L2	2	2
5.	Recall the meaning of tolerance of position in GD&T.	L1	3	2
6.	Clarify the difference between concentricity and symmetry controls.	L2	3	2
7.	What are the steps involved in setting up a tolerance chart?	L2	4	2
8.	Clarify the process of determining mean working dimensions in a part.	L2	4	2
9.	What are DFM guidelines for casting?	L1	5	2
10.	Write the importance of DFM in the design of turned parts.	L2	5	2

*PART - B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)*

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Demonstrate how statistical tolerance analysis can be used to reduce variation in an assembly process.	L4	1	16
	Or			
	b i How does Taguchi's tolerance design approach optimize product quality compared to traditional methods?	L2	1	8
	ii Evaluate the impact of non-linear analysis versus linear analysis in complex tolerance stack-ups.	L4	1	8
12.	a Apply Taguchi's quality loss function to a case where tolerances are exceeded, and calculate the potential loss in quality.	L3	2	16
	Or			
	b Break down the steps involved in selective assembly and explain their significance in the manufacturing process.	L3	2	16
13.	a i Demonstrate how form controls can be used to check the flatness of a surface in a mechanical part.	L2	3	8
	ii Apply run out controls to ensure the rotational accuracy of a part.	L2	3	8
	Or			

	b	i	Compare and contrast concentricity controls and symmetry controls in terms of their usage.	L2	3	8
		ii	Break down the steps in applying runout controls and explain how they ensure part functionality.	L2	3	8
14.	a		Explain how tolerance buildup impacts the accuracy of a final product assembly.	L3	4	16
			Or			
	b		Analyze the differences between tolerance charting for linear surfaces versus angular surfaces.	L3	4	16
15.	a		Discuss about the relationship between DFM guidelines for formed metal components and their impact on production cost.	L4	5	16
			Or			
	b		Analyze how Computer-Aided DFM software improves the manufacturability of complex designs.	L4	5	16