

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

M.E DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Second Semester

Product Design and Development

MF4071- Design for Manufacture and Assembly

Regulations - 2021

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.	What is parameter design?	RE	1	2
2.	Give an example unequal bilateral tolerance.	UN	1	2
3.	Write short notes on tolerance synthesis.	RE	2	2
4.	Mention the merits and demerits of computer aided tolerancing.	UN	2	2
5.	Differentiate between dimensioning and tolerancing.	UN	3	2
6.	How do profile controls enhance the design of complex features?	RE	3	2
7.	Define tolerance building.	RE	4	2
8.	List the applications of tolerance charting techniques.	UN	4	2
9.	What are the role of statistical analysis software?	UN	5	2
10.	Make a note on Vis/VSA.	UN	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Enumerate the various manufacturing methods of machine parts which a designer should know.	AP	1	13
	Or			
	b Explain in detail about Taguchi's approach to tolerancing.	UN	1	13
12.	a With an example, discuss the steps involved in applying the quality loss function to a multi component problem.	AP	2	13
	Or			
	b The fit requirements between piston and cylinder is $+0.015 \pm 0.009$ mm. The bore basic size is $\phi 100$. Assume that the cylinder bore is honed (IT7) and the piston outside diameter is high quality lapped (IT3). Also assume manufacturing tolerance of the piston equals the group tolerance of the piston; hole basis system being followed. It is proposed to achieve the above fit by following selective procedure. Specify the size ranges and the tolerance range for different mating groups that would satisfy the requirement of fit. Show the size zones of piston and cylinder neatly, side by side.	AP	2	13

13.	a	Elaborate the fundamental rules of GD & T and write its impacts for developing gears.	AP	3	13
		Or			
	b	With a suitable examples briefly explain Concentricity and symmetry Controls.	AP	3	13
14.	a	Discuss the major steps involved in tolerance analysis using tolerance charts.	UN	4	13
		Or			
	b	Explain the following (a) Automatic tolerance charting (b) Tolerance charting of angular surfaces.	UN	4	13
15.	a	Explain the step by step design rules for (i) drilled holes (ii) turned parts.	UN	5	13
		Or			
	b	Discuss the Boothroyd and Dewhurst method of DFMA with suitable examples.	UN	5	13

*PART – C (Marks 1*15 = 15)*

<i>Q.No</i>		<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
16.	a	Develop a tolerance chart for your own example.	AN	4	15
		Or			
	b	Is DFMA improved with assistance of computer? Justify your answer with suitable example.	AN	5	15