

St. Joseph's College of Engineering and Technology, Palai			
EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, JUNE 2021			
Course Code: MP 482			
Course Name: Product Development and Design			
Max. Marks: 70			Duration: 2hr 15min
PART A			
		<i>Answer any two full questions, each carries 10.5 marks.</i>	Marks
1	a)	Explain 'Product Life Cycle' of a manufactured product.	7
	b)	With an example, detail the steps in formulating the Target Specifications of a product.	3.5
2	a)	Discuss the different types of Customer needs related to the products they use.	7
	b)	With sketches, give examples of different product architectures.	3.5
3	a)	Detail what is 'Robust Design' of a product, and how to ensure it, accommodating variabilities in input factors.	7
	b)	Develop the basic 'Kano diagram' of customer satisfaction.	3.5
PART B			
<i>Answer any two full questions, each carries 10.5 marks.</i>			
4	a)	Explain DFM, with examples, for any two primary manufacturing processes.	7
	b)	Discuss the process of calculating DFA index, for a product with multiple parts, explaining the various considerations in it.	3.5
5	a)	Differentiate between Value engineering and Value analysis.	7
	b)	Perform value engineering, on a product of daily personal use, with 4 criteria and 3 alternatives.	3.5
6	a)	Describe the various types of values of a product.	7
	b)	Develop the plan for material selection for a water bottle, based on guidelines for DFE.	3.5
PART C			
<i>Answer any two full questions, each carries 14 marks.</i>			
7	a)	Discuss the roles of an Industrial Designer in product development.	8
	b)	'Ergonomics plays a crucial role in the success of a product'. Justify.	6
8	a)	Explain IPR and the methods to protect it.	8
	b)	Describe the disclosure preparation methods for filing patent application.	6
9	a)	Explain 'concurrent engineering' and the advantages of it in product development.	8
	b)	With an example, narrate a creativity exercise, and detail how it can be useful for a product development team.	6