



**B.E DEGREE EXAMINATIONS: APRIL / MAY 2023**

(Regulation 2018)

Fourth Semester

**COMMON TO AERO/MECH/MCE**

U18MEE0033: Product Design and Manufacturing

**COURSE OUTCOMES**

- CO1:** Apply concepts of product development and outline product planning process  
**CO2:** Apply relative importance of customer needs in establishing product specifications.  
**CO3:** Apply the principles of tolerance in Manufacturing.  
**CO4:** Assess the significance of the selection of datum & datum features.  
**CO5:** Apply MMC, LMC and RFS concepts.  
**CO6:** To define the principles of optimum design.

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 2 = 20 Marks)**

**(Answer not more than 40 words)**

- |   |     |                   |
|---|-----|-------------------|
| 1. List the challenges in product development.          | CO1 | [K <sub>2</sub> ] |
| 2. What is meant by product development?                | CO1 | [K <sub>2</sub> ] |
| 3. Classify the customer needs.                         | CO2 | [K <sub>2</sub> ] |
| 4. Summarize the data collection methods from customer. | CO2 | [K <sub>2</sub> ] |
| 5. Demonstrate GD&T.                                    | CO3 | [K <sub>3</sub> ] |
| 6. List the principles in GD & T                        | CO3 | [K <sub>3</sub> ] |
| 7. What is Datum plane?                                 | CO4 | [K <sub>2</sub> ] |
| 8. Define Stack-Up Analysis.                            | CO4 | [K <sub>2</sub> ] |
| 9. Name the tools used in CAD.                          | CO5 | [K <sub>2</sub> ] |
| 10. Outline the applications of CAD.                    | CO5 | [K <sub>2</sub> ] |

**Answer any FIVE Questions:-**

**PART B (5 x 16 = 80 Marks)**

**(Answer not more than 400 words)**

- |   |    |     |                   |
|---|----|-----|-------------------|
| 11. Explain the processes of a Product development in detail                | 16 | CO1 | [K <sub>2</sub> ] |
| 12. a) How to collect a feedback from customer?                             | 8  | CO2 | [K <sub>3</sub> ] |
| b) Compare the needs and results of the process in the product development. | 8  | CO2 | [K <sub>3</sub> ] |

13.	a)	Explain the scope of GD&T in detail.	8	CO3	[K <sub>2</sub> ]
	b)	Write short notes on Profile, Orientation, and Runout.	8	CO3	[K <sub>2</sub> ]
14.	a)	Demonstrate in detail about evaluation of a material condition.	8	CO4	[K <sub>2</sub> ]
	b)	Summarize MMC and LMC.	8	CO4	[K <sub>2</sub> ]
15.	a)	Explain the basic concepts of CAD.	8	CO5	[K <sub>3</sub> ]
	b)	Demonstrate about DFMA.	8	CO5	[K <sub>3</sub> ]
16.		Explain about principle of optimum design with examples.	16	CO6	[K <sub>2</sub> ]

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