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**Presidency University**

**Bengaluru**

 **SCHOOL OF ENGINEERING**

**MAKE UP EXAMINATION – SEP 2023**

**Course Code**: MEC 333

**Course Name**: Product Engineering & Design Thinking

**Program** : B. Tech. (Mechanical Engg.)

**Date**: 01-OCT-2023

**Time**: 9:30am to 12:30pm

**Max Marks**: 100

**Weightage**: 50%

 **Instructions:**

1. *Read the all questions carefully and answer accordingly.*
2. *Use of Design Data Hand book permitted*
3. *Use of Scientific Calculator permitted.*

**Part A [Memory Recall Questions]**

**Answer all the Questions. Each question carries 5 marks. (5Qx5M= 25M)**

1. Define Product Engineering and its types.

(C. O. No.1) [Knowledge]

1. Enlist any 5 roles of Product Engineer

(C. O. No.2) [Knowledge]

1. Enlist the importance of Product Engineering in product Development.

(C. O. No.3) [Knowledge]

1. Define a Product and a new Product with a suitable example.

(C. O. No.4) [Knowledge]

1. Identify any five skills of Product Engineering. (C. O. No.5) [Knowledge]

**Part B [Thought Provoking Questions]**

**Answer all the Questions. Each question carries 10 marks. (3Qx10M=30M)**

1. QFD (Quality Function Deployment) is a widely used tool for mapping of customer needs. Volvo Eicher uses the concepts of QFD in their product Development and are faced with a challenge of designing a QFD. As a product Engineer suggest the suitable steps to overcome the challenge.

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 (C. O. No.1) [Comprehension]

1. One plus Nord is recently launched in India with 5G capabilities and at a price range of Rs 30000. The Design team is not satisfied with the more number of parts of product and wish to change few components while keeping cost and quality of product same and making it more appealing to customers and in nutshell make it more innovative. Suggest a technique for innovative design and explain the steps for the same.

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 (C. O. No.2) [Comprehension]

1. Mahindra and Mahindra aims to reduce the cost of the dashboard design of XUV 400, a sub 4 meter compact SUV recently launched. Suggest a strategy as a Design Engineer the company should follow for idea generation and explain the same.

 (C. O. No.4) [Application]

**Part C [Problem Solving Questions]**

**Answer all the Questions. Each question carries 15 marks. (3Qx15M=45M)**

1. The design team for steering system design encounters the challenge in form of a question, How is the relationship mapped between kANO model and QFD? Suggest a solution for benefits for above relationship.

 (C. O. No.3) [Application]

1. Ideal value is the best result that team could hope for, the marginally value is the value of the metric that would just barely make the product commercially viable and the values are considered in establishing the target specification and concept testing. Suggest the steps for concept testing in detail.

 (C. O. No.4) [Application]

1. A new need has been established by Maruti Suzuki to provide a more effective cooling systems to the vehicles and it has mapped the need into metrics, identify and explain the steps of product design for a cooling system.

 (C. O. No.4) [Application]