

**NETTUR TECHNICAL TRAINING FOUNDATION**  
**DIPLOMA IN MECHATRONICS ENGINEERING & SMART FACTORY-CP15**  
**V SEMESTER SUPPLEMENTARY EXAMINATION-JUNE 2023**

**Subject: Product Design & Development**  
**Subject Code: CP15505T**

**Total Time: 2 Hr.**  
**Total Marks: 50 Marks**

**PART B**

**1.0 ANSWER ANY EIGHT OF THE FOLLOWING** **2\*8=16**

- 1.1 What is the prototype in designing?
- 1.2 Why do we do prototyping in design thinking?
- 1.3 What is design review?
- 1.4 List out few examples of pre- launch control plan
- 1.5 What is an actuators and what are its types?
- 1.6 Why in empathize methods - asking What- How-Why is implemented?
- 1.7 What is the 5W Tool in design thinking?
- 1.8 What is APQP? List out the 3 phases of APQP?
- 1.9 What is the purpose of PFMEA?
- 1.10 Define Product planning

**2.0 ANSWER ANY SIX OF THE FOLLOWING** **3\*6=18**

- 2.1 In the designing process, what is the role of "Refine the design "?
- 2.2 What are some pros and cons about taking online classes?
- 2.3 Explain the various factors in brainstorming
- 2.4 Explain the historical warranty and quality information.
- 2.5 Tabulate the checklist of DFMEA
- 2.6 When we called it as significant production run?
- 2.7 Draw production - Consumption cycle
- 2.8 What is the difference between Mechatronics systems and Conventional systems?

**3.0 ANSWER ANY FOUR OF THE FOLLOWING** **4\*4=16**

- 3.1 What are the benefits of simulation? Explain the process of simulation
- 3.2 Interpret the Customer journey map with 5W tool with the checklist.
- 3.3 Write a short note on the following:
  1. Voice of the customer
  2. Marketing strategy
  3. Process benchmark data
- 3.4 Write a short note on TTM with examples
- 3.5 What are the 12 step in design process?
- 3.6 Draw neat block diagram of mechatronics key elements

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**DIPLOMA IN MECHATRONICS-CP15**  
**V SEMESTER SUPPLEMENTARY EXAMINATION-JUNE 2023**

**Subject: Mechatronics System Design**  
**Subject Code: CP15 05 03**

**Total Time: 2 Hr.**  
**Total Marks: 50**

**PART B**

**1.0 ANSWER ANY EIGHT OF THE FOLLOWING**

**2\*8=16**

- 1.1 Brief about Top-down approach.
- 1.2 Write about the analogies diagram.
- 1.3 Define On- line Quality monitoring.
- 1.4 Brief the term potentiometer.
- 1.5 List out the benefits of Mechatronics. (Any 2)
- 1.6 State concurrent engineering.
- 1.7 List out the model categories.
- 1.8 Define E-manufacturing.
- 1.9 Define Real-Time interfacing.
- 1.10 List the basic building blocks of mechanical system.

**2.0 ANSWER ANY SIX OF THE FOLLOWING**

**3\*6=18**

- 2.1 Explain about conventional product and mechatronics product.
- 2.2 Give short note on mechanical rotational system.
- 2.3 Explain Optimization in mechatronics.
- 2.4 Explain the integrated design issues in mechatronics.
- 2.5 Mention two benefits of simulation.
- 2.6 List the challenges before R & D in mechatronics.
- 2.7 List various degrees of validity and explain any two of them.
- 2.8 Draw the block diagram of MEMS package.

**3.0 ANSWER ANY FOUR OF THE FOLLOWING**

**4\*4=16**

- 3.1 Write about ANN, how we can implement ANN?
- 3.2 Explain electrical system building blocks.
- 3.3 Explain the Fuzzy Logic Application in Mechatronics.
- 3.4 Discuss in detail about Potential (PV) and Flow (FV) variables?
- 3.5 Explain Supervisory Control in Manufacturing Inspection with neat diagram
- 3.6 Briefly explain the mechatronics design process.

