

NETTUR TECHNICAL TRAINING FOUNDATION
DIPLOMA IN MECHATRONICS ENGINEERING AND SMART FACTORY – CP15
VI SEMESTER REGULAR & SUPPLEMENTARY EXAMINATION-MAY 2023

Subject: Additive Manufacturing
Subject Code: CP15604T

Total Time: 2 Hr.
Total Marks: 50

PART B

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

- 1.1 Write the classifications of manufacturing techniques.
- 1.2 What are the steps involved in the 3D printing process?
- 1.3 What is infill?
- 1.4 Define vat polymerization
- 1.5 Explain about the support structure in SLA
- 1.6 Write down the common applications of Binder jetting printed parts
- 1.7 What are the different testing carried out in 3D Printing Materials?
- 1.8 Name the common plastics used in 3D printing process
- 1.9 Write down the metals used in 3D printing process
- 1.10 Write the abbreviation for a) DLP b) SLA

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

- 2.1 Write down the advantages and disadvantages of additive manufacturing
- 2.2 Name the different types of AM technologies
- 2.3 Explain warping in FDM printed parts
- 2.4 Write down the applications of SLA printed parts
- 2.5 Explain the DLP process
- 2.6 Write down the advantages & disadvantages of material jetting process
- 2.7 Write down the applications of 3D printing in following industry (2 each)
a) Aerospace b) Medical c) Automobile
- 2.8 Explain the types of support structure used in FDM, how it is removed?

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

- 3.1 Explain about FDM process in detail
- 3.2 Explain the design consideration of FDM process
- 3.3 Explain the process of binder jetting of metal
- 3.4 Write a brief explanation about poly jet process
- 3.5 Explain the process of powder bed fusion
- 3.6 What are the methods & tools used for post processing?

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DIPLOMA IN MECHATRONICS ENGINEERING AND SMART FACTORY – CP15
VI SEMESTER SUPPLEMENTARY EXAMINATION-MAY 2023

Subject: Product Design & Development
Subject Code: CP15 06 04

Total Time: 2 Hr.
Total Marks: 50

PART B

PART B

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

1. 1 If you are Mechatronics Product designer, draw a design of your choice product.
1. 2 List the 5 levels of product model.
1. 3 Draw the Production consumption cycle for Plastic Water bottle.
1. 4 What is simplification?
1. 5 Explain the Various stages of product Life cycle.
1. 6 Explain about the idea screening in product development.
1. 7 What are the Pre-Market Phases in Product Life Cycle?
1. 8 What is Gross profit?
1. 9 What are the Four general Strategies for Product Planning in Product Matrix?
1. 10 What is specialization?

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

2. 1 Give the reason for Morphology of design.
2. 2 Explain why Design for Environment is important.
2. 3 Write the importance of time to market in product design.
2. 4 Explain the objective and guidelines of good Environmental performance in Product design.
2. 5 What is life cycle assessment? Explain.
2. 6 List the factors involved in economic analysis.
2. 7 Give two Examples of design by innovation and mention its use.
2. 8 What is the operational aspect in analysis of the product?

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

3. 1 Draw and explain the product model.
3. 2 List and explain the new product development phases.
3. 3 Explain the production classification for consumer goods.
3. 4 List out any six of the material selection guide lines?
3. 5 Explain about the various stages of product life cycle.
3. 6 List and explain the seven phases of morphology.

