PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

TEST 1

Winter Semester: 2021 - 22

Course Code: MEC 3019

Course Name: Additive Manufacturing and its Applications

Program & Sem: B.Tech & IV Sem

Date: 26th April 2022

Time: 03:00 PM to 04:00 PM

Max Marks: 30

Weightage: 15%

Instructions:
 (i) *Read the all questions carefully and answer accordingly.*

Part A [Memory Recall Questions]

Answer both the Questions. Each question carries 4 marks.   (2Qx 4M= 8M)

1. What is additive manufacturing (AM)? List out the application of AM.

[4M] (C.O.No.1) [knowledge]

2. List out the application of Cubital's solid ground curing system used in AM.

[4M] (C.O.No.1) [knowledge]

Part B [Thought Provoking Questions]

Answer both the Questions. Each question carries 6 marks.   (2Qx6M=12M)

3. In order to build a prototype model AM system uses the different techniques. Briefly explain the what are the steps involved in building a model using Additive manufacturing system.

[6M] (C.O.No.1) [Comprehension]

4. CNC and AM machines uses different approach in developing a product/parts. Differentiate between CNC and AM machining process.   [6M] (C.O.No.1) [Comprehension]

Part C [Problem Solving Questions]

Answer the Question. question carries 10 marks.   (1Qx10M=10M)

5. AM process uses the photo- curable liquid resin that cures when exposed to laser beam. Explain the process with neat sketch with its application.   [10M] (C.O.No.1) [Comprehension]

Roll No [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

TEST 2

Winter Semester: 2021 - 22

Course Code: MEC 3019

Course Name: Additive Manufacturing and its Applications

Program & Sem: B.Tech & IV

Date: 1st June 2022

Time: 03:00PM - 40:00 PM

Max Marks: 30

Weightage: 15%

Instructions:

(i)   Read the all questions carefully and answer accordingly.

Part A [Memory Recall Questions]

Answer both the Questions. Each question carries FOUR marks.   (2Qx 4M= 8M)

Q.NO.1   Define Design for Manufacturing and Assembly (DFAM) and list out the importance of DFAM in additive manufacturing.   [4M] (C.O.No.2) [knowledge]

Q.NO.2   List out the objectives of Design for manufacturing and assembly (DFAM).
          [4M] (C.O.No.2) [knowledge]

Part B [Thought Provoking Questions]

Answer both the Questions. Each question carries SIX marks.   (2Qx6M=12M)

Q.NO.3   Additive manufacturing system are classified based on the how the parts are built from raw material to finished parts. Explain the classification of DFAM processes based on prototype/model development.   [6M] (C.O.No.2) [Comprehension]

Q.NO.4   Additive manufacturing systems uses different features to build the parts which is very difficult by using the conventional system. Explain the undercut and interlocking features used to build the product.   [6M] (C.O.No.2) [Comprehension]

Part C [Problem Solving Questions]

Answer the Question. The question carries TEN marks.   (1Qx10M=10M)

Q.NO.5   In order to overcome the limitations of AM, post processing techniques are used to enhance the properties of components. Explain the any five post processing techniques used in AM to enhance the properties of components.

          [10M] (C.O.No. 3) [Comprehension]

PRESIDENCY UNIVERSITY
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SCHOOL OF ENGINEERING

END TERM EXAMINATION

Winter Semester: 2021 - 22

Course Code: MEC 3019

Course Name: Additive Manufacturing and its Applications

Program & Sem: B.Tech & IV Sem

Date: 30th June 2022

Time: 09:30 AM- 12:30 PM

Max Marks: 100

Weightage: 50%

Instructions:

(i)   Read the all questions carefully and answer accordingly.

Part A [Memory Recall Questions]

Answer all the Questions. Each question carries FOUR marks.   (6Qx 4M= 24M)

1. What are the limitation and advantages of Additive manufacturing (AM) system.
   (C.O.No.1) [knowledge]

2. What is 3D printing? List out the application of 3D printing.   (C.O.No.1) [knowledge]

3. AM uses different design tools to develop a model of components. List out the challenges of CAD system faced by the design engineers in developing the model by using AM.
   (C.O.No.2) [knowledge]

4. List out the objectives of Design for manufacturing and assembly (DFAM).
   (C.O.No.2) [knowledge]

5. List out the post processing techniques used to enhance the AM products.
   (C.O.No.3) [knowledge]

6. What are the limitations of Additive manufacturing in Medical application .
   (C.O.No.4) [knowledge]

Part B [Thought Provoking Questions]

Answer all the Questions. Each question carries SIX marks.   (6Qx6M=36M)

7. AM system are classified based on the how the parts are built from raw material to building parts. Explain the classification of AM processes based on prototype/model development
   (C.O.No.1) [Comprehension]

8. Computer numerical control (CNC) and AM machines uses different approach in developing a product/parts. Differentiate between CNC and AM machining process.
   (C.O.No.1) [Comprehension]

9. Additive manufacturing systems uses different features to build the parts which is very difficult by using the conventional system. Explain the hallowing out parts and interlocking features used to build the product. (C.O.No.2) [Comprehension]

10. AM system has many capabilities to produce the complex parts which cannot be produced by conventional machining process. Explain the unique capabilities of Additive manufacturing (AM) currently in use. (C.O.No.2) [Comprehension]

11. Post processing of end products enhances the property of AM products. Explain how the Aesthetics of the parts is critical importance for its end applications.
(C.O.No.3) [Comprehension]

12. With the development of AM products can be brought to markets through product conceptualization, product creation, and product propagation being carried out by individuals and communities in any geographical region. Developments in AM offer possibilities for new products. Explain the new types of products developed making possible for specific person/ specific location and/or event specific products. (C.O.No.4) [Comprehension]

Part C [Problem Solving Questions]

Answer all the Questions. Each question carries TEN marks. **(4Qx10M=40M)**

13. To build a model layer by layer technique is used where in photo curable resin is used as raw material and it also uses galvanometer mirror to aid in building model. Explain the process with neat sketch with its application. (C.O.No.1) [Comprehension]

14. Product manufactured by AM process has to undergo different evaluation for quality checking. The evaluation of the components which was built by using AM technologies will be carried out based on seven attributes. Explain the seven attribute on which the alternative AM technologies will be evaluated. (C.O.No.3) [Comprehension]

15. Entrepreneurship involves individuals starting new enterprises or breathing new energy into mature enterprises through the introduction of new ideas. Explain how digiproneurship involves the creation of a business enterprise by connecting conceptualization, propagation, and/or creation. (C.O.No.4) [Comprehension]

16. Manufacturing through AM contributes significantly to different categories of Aeronautical applications. Explain any few AM products used in Aerospace application in detail.
(C.O.No.4) [Comprehension]

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