PAPER ID-410430

Roll No: | | | | | | | | | | | | |

B.TECH
(SEM VII) THEORY EXAMINATION 2021-22
ADDITIVE MANUFACTURING

Time: 3 Hours   *Total Marks: 100*

Notes: 1. Attempt all sections. if require any missing data; then choose suitably

SECTION A

1.   **Attempt *All*.**   **02X10=20**

a.	Define the term Layer Based Manufacturing.
b.	What is soft tooling?
c.	What is the difference between model and prototype?
d.	Differentiate between Direct and Indirect SLS system.
e.	What is Photo polymerization?
f.	Explain the term Powder Bed Fusion Processes
g.	Write a short note on STL file
h.	Write a brief note on STL file resolution.
i.	Define 3D printer technology used in Additive Manufacturing.
j.	How Additive Manufacturing helps in aerospace and bio medical applications.

SECTION B

2.   **Attempt any *03 parts* of the following:**   **03X10=30**

a.	Write a descriptive note on distinction between CNC and AM.
b.	Why is additive manufacturing important? Also classify additive manufacturing systems.
c.	What are the materials used in rapid prototyping?
d.	Discuss in detail about the problems associated with STL files used in Additive Manufacturing.
e.	With an example, discuss the type of materials available for Additive Manufacturing and their suitability in product development.

SECTION C

3.   **Attempt any *01* part of the following:**   **01X10=10**

(a)	Describe the steps involved in production of inserts using the 3D keltool process with neat sketches.
(b)	Define additive manufacturing. Explain the basic methodology involved in it. Also Explain Time Comparison Engineering with the help of block diagram

4.   **Attempt any *01* part of the following:**   **01X10=10**

(a)	Discuss the role of Computer Aided Design Technology in the development of Additive Manufacturing processes. Enlist the role of other associated technologies for further improvement of AM systems
(b)	Compare wireframe, surface and solid models with suitable examples.

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5. **Attempt any *01* part of the following:** **01X10=10**

(a)	Explain the working principle of Directed Energy Deposition (DED) Processes with neat sketch. What are the process parameters of DED?
(b)	Define powder bed fusion processes. Discuss the solid-state sintering and chemically induced sintering with suitable examples

6. **Attempt any *01* part of the following:** **01X10=10**

(a)	What is the important requirement that must be fulfilled during STL file generation?
(b)	Explain STL repair and STL manipulation with respect to magics AM software.

7. **Attempt any *01* part of the following:** **01X10=10**

(a)	Write short notes on: (i) Object Quadra system. (ii) Thermal jet printer.
(b)	Explain in brief the applications of AM systems in various industries with examples.