Printed Pages:01 **Sub Code: KME071**

Paper Id: 231923 **Roll No.**

B. TECH
(SEM VII) THEORY EXAMINATION 2022-23
ADDITIVE MANUFACTURING

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

(a) Differentiate between additive manufacturing and CNC machining.
(b) What is 3D printer?
(c) What are the 8 steps in additive manufacturing?
(d) Define the need of CAD technology for additive manufacturing.
(e) Name the two DED systems.
(f) Define Reaction Rates for photopolymers.
(g) How additive manufacturing helps in aerospace and biomedical applications?
(h) What are the various materials used in material jetting?
(i) What is self customization?
(j) How additive manufacturing processes can benefit the jewellery industry?

SECTION B

2. Attempt any *three* of the following: 10x3 = 30

(a) Explain the nomenclature of Additive manufacturing machines.
(b) What is the hybrid technologies used in AM process?
(c) Describe the Powder Bed Fusion (PBF) process of additive manufacturing .Also give its advantages and disadvantages.
(d) What are the various functions that other software systems include to assist AM?
(e) Discuss in brief the intellectual property issue related to AM machines.

SECTION C

3. Attempt any *one* part of the following: 10x1=10

(a) Mention the various types of additive manufacturing technologies.
(b) Write a short note on Direct and Indirect Processes in Additive manufacturing.

4. Attempt any *one* part of the following: 10x1=10

(a) Explain in brief the other associated technology that has been developed along with AM?
(b) Explain how metal-based AM system is different from polymer-based AM system?

5. Attempt any *one* part of the following: 10x1=10

(a) Explain WEAVE and STAR-WEAVE scan patterns in Additive manufacturing.
(b) What are the various powder handling challenges in AM?

6. Attempt any *one* part of the following: 10x1=10

(a) Give a brief description about the potential of AM.
(b) How Am based manufacturing technology meets the requirement of customization?

7. Attempt any *one* part of the following: 10x1=10

(a) How additive manufacturing leads to efficient product development?
(b) Write short notes on secondary rapid prototyping processes?