

Name: Enrolment No:	
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UPES
End Semester Examination, December 2023

Course: Additive Manufacturing
Semester: III
Program: M.Tech A&RE
Course Code: ECEA8001P

Time : 03 hrs.
Max. Marks: 100

Instructions:

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Briefly describe the benefits of AM over CNC.	4	CO1
Q 2	Identify the two conditions must be fulfilled for establishment of solid-state bonding during UC.	4	CO1
Q 3	Discuss four important process parameters of Ultrasonic Consolidation.	4	CO1
Q 4	Identify some of the potential applications of additive manufacturing.	4	CO2
Q 5	List the major disadvantages of VAT photopolymerization.	4	CO1

SECTION B
(4Qx10M= 40 Marks)

Q 6	Discuss briefly any four characteristics in designing a powder delivery system in PBF process ?	10	CO3
Q 7	Provide an overview of various materials characterization needed in additive manufacturing.	10	CO4
Q 8	Discuss how bioprinting technology will evolve in the future and the challenges it may face.	10	CO2
Q9	Discuss the working principle of FDM process. <p style="text-align: center;">OR</p> Explain the working principle of any LOM processes?	10	CO1

SECTION-C
(2Qx20M=40 Marks)

Q 10	Explain the relationship between structure, processing properties, and performance.	20	CO4
Q 11	Part of a titanium-based alloy component has failed, and replacing the entire component would be expensive. In such situations, please choose an additive manufacturing process and discuss it in detail. OR Discuss a suitable additive manufacturing process for preparing biomedical soft tissue.	20	CO3