Code No: 137AC **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, October/November - 2020
ADDITIVE MANUFACTURING TECHNOLOGY
(Mechanical Engineering)

Time: 2 Hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks

1.a) What are the three fundamental fabrication processes? Each one of the following manufacturing processes/methods in the Table below belongs to one of the three basic types of fabricators. Tick under the column if you think it belongs to that category. If you think that it is a hybrid machine, you may tick in more than one category.

S.No.	*Manufacturing Process*	*Subtractive*	*Additive*	*Formative*
1	Pressworking			
2	Selective Laser Sintering			
3	Plastic Injection Molding			
4	CNC Nibbling			
5	CNC CMM			
6	Laminated Object Manufacturing			

b) Describe the three phases of development leading to Rapid Prototyping. [8+7]

2.a) Explain the roles played by the prototypes in the product development process.

b) Describe the basic approach adopted which is common to all the different techniques of Rapid Prototyping. [7+8]

3. Compare and contrast the laser-based stereolithography systems and the solid ground curing systems. What are the advantages (and disadvantages) for each of the systems.[15]

4.a) Discuss the principle behind the two-laser-beam method. What are the major problems in this method?

b) Describe the process flow of Cubic's Laminated Object Manufacturing. [8+7]

5.a) Describe the three dimensional printing process and its applications.

b) Explain the principles relating to the SLS process. [8+7]

6. How would you differentiate between the following types of rapid tooling processes:
(a) indirect soft tooling, and (b) indirect hard tooling. [7+8]

7.a) How can the problem of overlapping facets be solved?

b) Compare and contrast the features of the following Rapid Prototyping Software: Magics, Rhino and View Expert. [8+7]

8. What are the typical RP applications in design? Briefly describe each of these applications and illustrate them with examples. [15]

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