

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M.TECH
BRANCH: MECH (CAAD)

SEMESTER: II
SESSION: SP/22

SUBJECT: ME520 ADDITIVE MANUFACTURING

TIME: 2 HOURS

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 7 questions each of 10 marks and total 70 marks.
 2. Candidates may attempt any 5 questions maximum of 50 marks.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data handbook/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) Why do we use printed support? Explain the 45° rule for self-supporting structures. [2+2]
Q.1(b) Explain why support structures are not needed in the 3DP process. [2]
Q.1(c) What are the challenges that industries encounter while embracing additive manufacturing? [4]
- Q.2(a) Describe with suitable sketches the process flow of the 3D System's Stereolithography Apparatus. [5]
Q.2(b) Compare and contrast laser-engineered net shaping and wire-laser additive manufacturing. [5]
- Q.3 What is reverse engineering? Explain how reverse engineering can be used for additive manufacturing? Enlist some typical applications of reverse engineering-based AM. [10]
- Q.4 Explain the working and advantages of (i) Linear motion guideways (ii) Ball screws [10]
- Q.5 What is .stl file format? What are the common errors that occur in .stl file? How .stl file error can be rectified? [10]
- Q.6 Discuss some of the indirect rapid tooling method applications. [10]
- Q.7 What are the various post-processing operations of additive manufacturing? Why post-processing is required? [10]

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