Code No: **R164103C** **R16** **Set No. 1**

IV B.Tech I Semester Regular/Supplementary Examinations, Jan/Feb - 2022

ADDITIVE MANUFACTURING

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
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PART–A *(14 Marks)*

1. a) What are the advantages of SLA process? [2]
   b) What is solid based RP? Write the methods in solid based RP Processes. [2]
   c) Discuss the benefits of 3D printing. [3]
   d) State few applications of Rapid tooling investment casting? [2]
   e) List out the newly proposed data formats of RP. [2]
   f) How does jewelry industry make use of rapid tooling applications? [3]

PART–B *(4x14 = 56 Marks)*

2. a) Brief about strength, weakness and applications of SGC. [7]
   b) With a neat sketch explain the working of Stereo lithography Apparatus. [7]

3. a) What is Laminated object manufacturing? Explain the working principle and write its advantages and disadvantages. [8]
   b) List the specifications of FDM machine [6]

4. a) Explain, with suitable sketch, the process of manufacturing a prototype of circular disc made of ceramic material. [7]
   b) Discuss the working principle of 3D printing machine. List out the technical specifications. [7]

5. a) What is rapid tooling? What is its need? Compare rapid tooling with conventional tooling. [7]
   b) Discuss the process of making a rapid tool for spin casting. Assume your own example as product. [7]

6. a) Discuss the consequences of building a valid and invalid tessellated models using STL file format. [8]
   b) Explain the features of Velocity 2 and Rhino RP software's. [6]

7. Categorize how the material relationship will contribute in rapid prototype technique and specify the applications in forensic science and anthropology. [14]