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B. Tech ME (Semester – 7th)
ADDITIVE MANUFACTURING
Subject Code: BMECD1713
Paper ID: 18112339

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(2 marks each)**

Q1. Attempt the following:

a) Classify the additive manufacturing processes.
b) List any four different materials used in additive Manufacturing Technology.
c) What are the limitations of FDM?
d) Briefly explain geometrical modelling techniques.
e) Discuss about photo polymerization.
f) What are the limitations of SLA process and how are they modified.
g) How additive manufacturing helps in aerospace and bio medical applications?
h) What are the indirect methods for rapid tool production?
i) Brief the post treatments of SLM.
j) How does jewelry industry make use of rapid tooling applications?

Section – B **(5 marks each)**

Q2. Discuss on why AMT is more advantageous than conventional machining processes for certain applications and vice-versa.

Q3. What is rapid tooling? What is its need? Compare rapid tooling with conventional tooling.

Q4. What is Laminated object manufacturing? Explain the working principle and write its advantages and disadvantages.

Q5. Discuss in detail about the problems associated with STL files used in additive manufacturing.

Q6. Explain the functioning of FDM process model and how the orientations (any three types) are carried out.

Section – C **(10 marks each)**

Q7. (a) Explain about magics and mimics softwares.
b) Describe newly proposed formats CLI, RPI and the LEAF briefly and contrast their strengths and weaknesses.

Q8. Define powder bed fusion processes. Discuss the solid-state sintering and chemically induced sintering with suitable examples.

Q9. Discuss the working principle of 3D printing machine. List out the technical specifications.