



P.E.S. College of Engineering, Mandya - 571 401
 (An Autonomous Institution affiliated to VTU, Belagavi)
Seventh Semester, B.E. - Industrial and Production Engineering
Semester End Examination; February - 2022
Additive Manufacturing

Time: 3 hrs

Max. Marks: 100

Course Outcomes

The Students will be able to:

CO1: Explain AM systems based on raw materials used.

CO2: Compare various AM process.

CO3: Distinguish between AM machines and concept modelers.

CO4: Summarize various types of Direct and Indirect Rapid Tools.

CO5: Distinguish between part building errors in SL and SLS process.

Note: I) PART - A is compulsory. Two marks for each question.

II) PART - B: Answer any Two sub questions (from a, b, c) for Maximum of 18 marks from each unit.

Q. No.	Questions	Marks	BLs	COs	POs
I : PART - A		10			
I a.	List the advantage and disadvantage of additive manufacturing.	2	L1	CO1	PO1
b.	Briefly explain the concept of net shape manufacturing.	2	L1	CO2	PO1
c.	What do you mean by concept modeler?	2	L1	CO3	PO1
d.	Explain the classification of rapid tools.	2	L1	CO4	PO1
e.	List the factors that affect accuracy during rapid manufacturing.	2	L1	CO5	PO1
II : PART - B		90			
UNIT - I		18			
1 a.	Explain the need of rapid prototyping.	9	L2	CO1	PO1
b.	With a neat sketch, explain the working principle of Sterio lithography.	9	L3	CO1	PO1
c.	Describe the steps involved in producing a part by solid base curing.	9	L3	CO1	PO1
UNIT - II		18			
2 a.	With a neat sketch, explain the working principle of laser sintering process.	9	L3	CO2	PO2
b.	With a neat sketch, explain the principle of operations of laminated object manufacturing.	9	L3	CO2	PO2
c.	Explain the working principle of fusion deposition method with an aid of neat sketch.	9	L3	CO2	PO2
UNIT - III		18			
3 a.	Explain functional models. Explain pattern for vacuum casting.	9	L2	CO3	PO2
b.	Explain the principle of concept modelers. List the difference between AM machine and concept modeler.	9	L2	CO3	PO2
c.	Briefly explain thermal Jet Printer.	9	L2	CO3	PO2

UNIT - IV**18**

- 4 a. Explain the following:
- i) Indirect rapid tooling 9 L2 CO4 PO1
 - ii) Silicone rubber tooling
- b. With a neat sketch, explain 3D Keltool process. 9 L2 CO4 PO2
- c. Explain in detail laminate tooling and DTM rapid tooling. 9 L2 CO4 PO1

UNIT - V**18**

- 5 a. Explain the influence of part build orientation in SL and SLS process. 9 L2 CO5 PO1
- b. Explain errors due to tessellation and slicing part building error in selective laser sintering process. 9 L1 CO5 PO1
- c. Briefly explain the errors in finishing processor. 9 L2 CO5 PO1

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