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

IV B.Tech I Semester Regular Examinations, October/November - 2019

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
*****

PART–A *(14 Marks)*

1.	a)	What is the need for additive manufacturing?	[2]
	b)	Give a short note on photopolymers.	[3]
	c)	Briefly write the prominence of Laminated object manufacturing.	[2]
	d)	Explain 3D Keltool process.	[3]
	e)	What is the consequence of building valid tessellated model?	[2]
	f)	Mention RP applications in automotive industry.	[2]

PART–B *(4x14 = 56 Marks)*

2.	a)	Compare and explain the differences between conventional machining and rapid prototyping.	[7]
	b)	Explain with a neat sketch the working principle of Stereo-lithography (SLA) process with advantages and disadvantages.	[7]
3.	a)	Describe the process of fused deposition modeling and list the factors that affect the part quality.	[7]
	b)	Write the models and specifications of different LOM machines used.	[7]
4.	a)	What are different types of materials available for the SLS system? What are their respective applications?	[7]
	b)	List out technical specifications of 3D printer.	[7]
5.	a)	Write the functional differences between conventional tooling and rapid prototyping tooling?	[7]
	b)	Briefly discuss about DTM Rapid Tool Process.	[7]
6.	a)	Explain any two translators used in place of STL.	[7]
	b)	Write a short note on Solid View, View Expert software.	[7]
7.	a)	Discuss RP applications in forensic science and anthropology.	[7]
	b)	Explain the applications of RP in aerospace industry.	[7]

Code No: **R164103C** **R16** **Set No. 2**

IV B.Tech I Semester Regular Examinations, October/November - 2019

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
*****

PART–A *(14 Marks)*

1.	a)	List out the advantages of Rapid prototyping.	[2]
	b)	Explain the usage of LOM tools.	[2]
	c)	Enumerate the specifications of SLS machine.	[3]
	d)	What do you understand from spray metal deposition?	[2]
	e)	What is the consequence of building invalid tessellated model?	[3]
	f)	Mention RP applications in aerospace industry.	[2]

PART–B *(4x14 = 56 Marks)*

2.	a)	Compare RP technology with CNC technology.	[7]
	b)	Briefly explain the stereo lithography process with neat sketch and what are the process parameters of SLA system that influence the part quality?	[7]
3.	a)	Explain with a neat sketch the working principle of FDM process.	[7]
	b)	List out the applications, advantages and disadvantages of laminated object manufacturing (LOM).	[7]
4.	a)	Explain the need of post processing in the powder based AM process.	[7]
	b)	Compare LOM with SLS with suitable reasons.	[7]
5.	a)	Explain about any one ceramic tooling process.	[7]
	b)	Classify direct rapid tooling method and explain any one briefly.	[7]
6.	a)	List various rapid prototyping data formats. Explain in detail.	[7]
	b)	Briefly discuss about ‘Rhino’.	[7]
7.	a)	Explain the application of RP in Jewelry field.	[7]
	b)	Discuss RP applications in Visualization of Bimolecular field.	[7]

Code No: **R164103C** **R16** **Set No. 3**

IV B.Tech I Semester Regular Examinations, October/November - 2019

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
*****

PART–A *(14 Marks)*

1. a) What is meant by Solid Ground Curing? [3]
   b) Give the applications of LOM. [2]
   c) Name any two products that can be made through 3D printing. [2]
   d) Differentiate between direct and indirect tooling. [3]
   e) Write about RP Newly proposed formats. [2]
   f) Mention RP applications in biomedical industry. [2]

PART–B *(4x14 = 56 Marks)*

2. a) Explain the impact of Additive manufacturing on product development. [7]
   b) List advantages and disadvantages when rapid prototyping concept is applied to solid ground curing. [7]

3. a) Explain with a neat sketch the working principle of LOM process. [7]
   b) Name the materials used in fusion deposition modeling and state the advantages of this process. [7]

4. a) Demonstrate the applications of SLS. [7]
   b) In detail explain about process details and machine details of 3-D printing. [7]

5. a) Which rapid tooling techniques are best suited for production of ceramic parts. Explain any one? [7]
   b) Classify indirect rapid tooling method and explain any one briefly. [7]

6. a) Explain about STL file problems in detail with examples. [7]
   b) Describe the importance of magics and mimics of rapid prototyping software. [7]

7. a) Explain with a suitable example the application of Rapid Prototyping in Automotive Industry. [7]
   b) What is the significant role of RP in design and production of medical devices? [7]

Code No: **R164103C** **R16** **Set No. 4**

IV B.Tech I Semester Regular Examinations, October/November - 2019

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
*****

PART–A *(14 Marks)*

1.	a)	What is the importance of Stereo lithography process?	[3]
	b)	Mention the specifications of LOM.	[2]
	c)	List the specifications of SLS.	[2]
	d)	Explain the need for Rapid tooling.	[2]
	e)	Write about Rhino.	[3]
	f)	Mention RP applications in arts and architecture.	[2]

PART–B *(4x14 = 56 Marks)*

2.	a)	Discuss the classification of RP process.	[7]
	b)	Briefly discuss about strengths, weaknesses and applications of solid ground curing.	[7]
3.	a)	What are the various LOM materials and their typical applications?	[7]
	b)	How FDM used in Rapid prototyping? What are the applications of FDM models?	[7]
4.	a)	Explain with a neat sketch the working principle of Selective Laser Sintering process.	[7]
	b)	Describe the working principle of three dimensional printing along with its advantages.	[7]
5.	a)	What is rapid tooling? Compare rapid tooling with conventional tooling.	[7]
	b)	What are the steps involved in production of inserts using 3D Keltool process.	[7]
6.	a)	List various Rapid Prototyping Data Formats. Explain about the significance of STL format.	[7]
	b)	Write a short note on 3D expert software.	[7]
7.	a)	Identify the important RP applications in field of medical and bioengineering.	[7]
	b)	Discuss the GIS applications of RP.	[7]