Code No: **R194203A** **R19** **Set No. 1**

IV B.Tech II Semester Regular Examinations, April– 2023

ADDITIVE MANUFACTURING

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

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UNIT I

1	a)	Explain in detail post processing of additive manufacturing parts.	[8]
	b)	Discuss the merits and applications of Solid Ground Curing (SGC) method.	[7]
		(OR)	
2	a)	Write the few applications of stereo lithography system?	[7]
	b)	Explain the advantages and applications of AM in various fields.	[8]

UNIT II

3	a)	Explain the path generation in fusion decomposition modeling (FDM)	[7]
	b)	What are the various LOM materials and their typical applications?	[8]
		(OR)	
4	a)	Explain how the fusion deposition modeling will works with an example.	[7]
	b)	Write the models and specifications of different LOM machines used.	[8]

UNIT III

5	a)	What are different types of materials available for the SLS system? What are theirrespective applications?	[8]
	b)	Explain various process parameters of 3D Printing Process.	[7]
		(OR)	
6	a)	Enumerate the basic process and capabilities of 3D printing.	[7]
	b)	Discuss the SLS process and list out the factors thataffect the part quality.	[8]

UNIT IV

7	a)	Explain the process of 3D Keltool. Write advantages, disadvantagesand applications of it.	[7]
	b)	Enumerate the differences between EOS direct tool process and direct metal tooling process.	[8]
		(OR)	
8	a)	Explain the spray metal deposition tooling techniques with a neat sketch.	[7]
	b)	Which rapid tooling techniques are best suited for production of ceramic parts.Explain anyone.	[8]

UNIT V

9	a)	Where do the 3D data needed for processing come from? Explain briefly.	[7]
	b)	Explain various AM-based approaches for making medical implants for headsurgery?	[8]
		(OR)	
10	a)	Explain how does aerospace technology make use of soft tooling applications?	[7]
	b)	What is the significant role of RP in medical and bioengineering fields.	[8]

Code No: **R194203A** **R19** **Set No. 2**

IV B.Tech II Semester Regular Examinations, April– 2023

ADDITIVE MANUFACTURING

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

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UNIT I

1	a)	Explain with a neat sketch the working principle of Stereo Lithography.	[7]
	b)	List out the advantages and limitations of rapid prototyping.	[8]
		(OR)	
2	a)	Discuss the classification of RP Processes with a flow chart.	[7]
	b)	Explain the concept of layering technology with a neat sketch.	[8]

UNIT II

3	a)	List out the applications, advantages and disadvantages of FDM?	[9]
	b)	Compare the process of FDM with LOM with an example.	[6]
		(OR)	
4	a)	Describe the process of fused deposition modeling and list the factors that affect the part quality.	[7]
	b)	Describe LOM process and list the factors that affect the part quality.	[8]

UNIT III

5	a)	What are various materials available for the 3DP with respect to their applications?	[7]
	b)	Explain the working principle of SLS with a neat sketch.	[8]
		(OR)	
6	a)	Enumerate the basic process and capabilities of SLS process.	[7]
	b)	Write the models and specifications of different 3D printing machines used.	[8]

UNIT IV

7	a)	Explain about spin casting process with its merits and demerits.	[7]
	b)	Discuss briefly the classification of rapid tooling methods.	[8]
		(OR)	
8	a)	Explain about ceramic tooling process. List out its merits and demerits.	[7]
	b)	Discuss the characteristics of various LOM Tools used in rapid tooling.	[8]

UNIT V

9	a)	Discuss the importance of magics and mimics operations in AM software.	[7]
	b)	Explain the applications of AM in the field of jewellery industry.	[8]
		(OR)	
10	a)	Explain the best AM technique that is suitable for GIS applications.	[7]
	b)	Write a short note on ‘Rhino’.	[8]

Code No: **R194203A** **R19** **Set No. 3**

IV B.Tech II Semester Regular Examinations, April– 2023

ADDITIVE MANUFACTURING

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

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UNIT I

1	a)	Make a list of different characteristics of AM technologies as a means to compare with CNC machining.	[7]
	b)	Solid Ground Curing has been described as a 2D channel (layer) technique. Could it also be described in another category? Why?	[8]
		(OR)	
2	a)	Discuss two instances where a layer-based approach has been used in fabrication, other than AM.	[8]
	b)	Discuss the photopolymerization process with an example.	[7]

UNIT II

3	a)	What are the various FDM materials and their typical applications?	[7]
	b)	What is meant by “decubing” in LOM? List its applications.	[8]
		(OR)	
4	a)	Explain clearly about the various process parameters in LOM	[7]
	b)	Enumerate the differences between FDM and LOM.	[8]

UNIT III

5	a)	Explain laser generation process with neat sketch & also its applications?	[7]
	b)	List the application areas of selective laser sintering.	[8]
		(OR)	
6	a)	List the applications and limitations of 3D printing.	[7]
	b)	What is the power source used to heat-up the material? Explain data preparation for SLS.	[8]

UNIT IV

7	a)	Define rapid tooling? Compare rapid tooling with conventionaltooling.	[7]
	b)	Explain briefly about sand casting techniques used in rapid tooling.	[8]
		(OR)	
8	a)	Write a short note on aluminium filled epoxy tooling?	[7]
	b)	Discuss briefly about the RTVepoxy tools with their merits.	[8]

UNIT V

9	a)	Discuss the role of AM in forensic science andanthropology fields.	[7]
	b)	Write a short note on STL files and solid view?	[8]
		(OR)	
10	a)	Write short notes on errors in SH files?	[7]
	b)	Write a short note on the applications of AM in production of medical devices.	[8]

Code No: **R194203A** **R19** **Set No. 4**

IV B.Tech II Semester Regular Examinations, April– 2023

ADDITIVE MANUFACTURING

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks
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UNIT I

1	a)	List and explain the different process parameters of SLA technique.	[7]
	b)	Describe the benefits and limitations of Rapid Prototyping.	[8]
		(OR)	
2	a)	What are the advantages and disadvantages of solid groundcuring?	[7]
	b)	Explain the additive manufacturing process with a flow chart.	[8]

UNIT II

3	a)	Explain the various build parameters that affects the FDM.	[7]
	b)	Write a short note on the LOM slice software.	[8]
		(OR)	
4	a)	Explain the principle, process parameter, process details of FDM.	[7]
	b)	What are the advantages and disadvantages of LOM?	[8]

UNIT III

5	a)	What is SLS process? Explain why is SLS so popular?	[7]
	b)	How does 3D printing work? What is 3D printing good for?	[8]
		(OR)	
6	a)	List out the differences between SLS and SLA.	[7]
	b)	Explain the main problems associated with 3D printing technology	[8]

UNIT IV

7	a)	Write a short note on indirect rapid tooling?	[7]
	b)	Explain briefly about die casting with a neat sketch.	[8]
		(OR)	
8	a)	How does rapid tooling help in product development? What are the applications of rapid tooling?	[7]
	b)	Discuss briefly about DTM rapid tooling process with a neat sketch.	[8]

UNIT V

9	a)	Write short notes on influence of building orientation?	[7]
	b)	Write the applications of AM process in automotive industry.	[8]
		(OR)	
10	a)	Enumerate the features of the software's for RP.	[7]
	b)	Discuss the applications of AM process in coin industry.	[8]