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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

First Semester, M. Tech – Mechanical Engineering (MCIM)

Semester End Examination; Jan/Feb - 2016

Additive Manufacturing

Time: 3 hrs *Max. Marks: 100*

***Note**: Answer **FIVE** full questions, selecting **ONE** full question from each **unit**.*

UNIT - I

1	a.	Define prototype. List the roles of prototype in product development process.	5
	b.	Explain the basic methodology of RP.	7
	c.	Briefly explain the principle of SLA process with a neat schematic sketch.	8
2	a.	Explain the feasibility of time compression in product development through rapid prototyping Technology.	10
	b.	Write a note on photo polymerization process.	6
	c.	Define trapped volume in stereolithography process.	4

UNIT - II

3	a.	Explain different materials used in SLS process.	6
	b.	List the various process parameters which affect the part quality of FDM process.	6
	c.	Explain various steps involved in solid ground curing.	8
4	a.	With a neat sketch briefly explain SLS process.	10
	b.	What are the inherent disadvantages of LOM process and LOM models? What are the different LOM materials?	10

UNIT - III

5	a.	Explain how magic communicator plays an important role in collaborative product development.	10
	b.	With neat schematic sketch, explain lens process.	10
6	a.	Define concept modeler. Enlist the various techniques of concept modeler.	6
	b.	Give the technical specification of object quadra system.	8
	c.	Differentiate between concept modeler and RP model.	6

UNIT - IV

7	a.	Differentiate between soft tooling versus Hard tooling.	4
	b.	With neat sketch explain 3D keltool process.	10
	c.	Explain spray metal tooling process.	6
8	a.	What are the processes that you would use to make tools when you want 50 parts, 500 parts and 50000 parts? Explain the reasons behind your selection.	6

Contd…2

	b.	Explain the spin casting process.	4
	c.	How the processing of Rapid steel 2.0 does differ from that of Rapid 1.0? Also compare the various properties of both the steel used in DTM Rapid tool process.	10

UNIT - V

9	a.	Briefly explain errors due to data preparation.	12
	b.	Define the term reverse engineering? Enlist the advantages and applications of reverse engineering.	8
10	a.	Briefly explain the orientation constraints of the SL process.	10
	b.	Write a note on surface digitizing in reverse engineering process for obtaining geometrical data.	6
	c.	Enumerate the influence of build orientation in part building.	4

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