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Code No. : 16142 AS (D)

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

B.E. VI-Semester Advanced Supplementary Examinations, July-2023

Additive Manufacturing and its Applications (OE-IV)

Time: 3 hours

Max. Marks: 60

Note: Answer all questions from Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	Define the term prototype and give examples.	2	1	1	1
2.	What are the benefits of RPT to consumer?	2	1	1	1
3.	Explain the principle of SLA process.	2	1	2	1
4.	Briefly explain the steps in the SGC process.	2	1	2	5
5.	What are the two methods of support removal used in FDM?	2	1	3	1
6.	Name various materials used in LOM process to make parts.	2	2	3	1
7.	Name the hardware components used in Sinter station Pro SLS system.	2	2	4	5
8.	What parameters effect the performance of 3DP process?	2	1	4	5
9.	List some AM applications in Design.	2	1	5	1
10.	List the applications of AM in medical and bio-engineering fields.	2	1	5	1
Part-B (5 × 8 = 40 Marks)					
11. a)	Discuss the roles of prototypes in the product development process.	4	2	1	1
b)	What are the phases of development from prototyping to Rapid prototyping? Explain.	4	2	1	1
12. a)	Compare the strengths of SLA and SGC processes.	4	2	2	5
b)	Discuss the process of photo polymerization with sketches.	4	3	2	1
13. a)	Compare the applications of FDM and LOM processes.	4	2	3	5
b)	Explain the steps in the LOM process with a sketch.	4	3	3	5
14. a)	Compare the weaknesses of SLS and 3DP processes.	4	2	4	1
b)	How powder is converted into a solid object using a binder. Name and explain the process.	4	3	4	5

15. a)	Discuss the steps in the coin making process using AM technology.	4	2	5	5
b)	Discuss how AM is used in (a) GIS (b) Jewelry making.	4	4	5	1
16. a)	Classify prototypes based on the various aspects of interests and explain the details.	4	2	1	1
b)	What are the main components of SLA system? Explain the SLA process using these components.	4	3	2	1
17.	Answer any <i>two</i> of the following:				
a)	Discuss the strengths and weaknesses of FDM process.	4	3	3	5
b)	Discuss the sinter bonding process with reference to SLS system.	4	3	4	5
c)	Discuss the case study of "Design verification of an Airline Electrical Generator" by Sundstrand Aerospace.	4	4	5	5

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level -- 1	20%
ii)	Blooms Taxonomy Level -- 2	40%
iii)	Blooms Taxonomy Level -- 3 & 4	40%
