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Code No. : 16136 F

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

B.E. VI-Semester Main & Backlog Examinations, June-2022

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.	Write any four advantages of Additive Manufacturing.	2	1	1	1
3.	Name the main components of SLA system.	2	1	2	1
4.	List some limitations of SGC process.	2	1	2	1
5.	What are the strengths of LOM process?	2	1	3	1
6.	Draw a neat sketch of FDM process.	2	1	3	1
7.	Support structures are not required in SLS process. Why?	2	1	4	1
8.	Explain the principle of 3DP process.	2	1	4	1
9.	How additive manufacturing is useful in Jewelry Industry.	2	2	5	1
10.	What are the applications of Bio-molecular models made by RPT.	2	2	5	1
<i>Part-B (5×8 = 40 Marks)</i>					
11. a)	Discuss the steps in process chain of RPT.	4	2	1	1
b)	Explain the concept of prototypes based on the three aspects of interests.	4	2	1	1
12. a)	Discuss SLA process with a neat sketch.	4	3	2	1
b)	Explain the three steps in the SGC process.	4	3	2	1
13. a)	Explain the Pre-processing, Building and Post-processing phases in LOM process.	4	4	3	1
b)	Compare the strengths of LOM and FDM processes.	4	2	3	1
14. a)	Explain the process of Sinter bonding in SLS process.	4	2	4	1
b)	What are the critical factors that influence the performance and functionalities of 3D printing process? Explain them in detail.	4	4	4	1

15. a)	Discuss the application of Additive mfg in coin Industry.	4	2	5	1
b)	How Volkswagen has performed the design verification of complex Gearbox housing. Explain?	4	3	5	1
16. a)	Discuss the roles of prototypes in the product development process.	4	4	1	1
b)	Discuss the process of photo-polymerization used in SLA process.	4	3	2	1
17.	Answer any <i>two</i> of the following:				
a)	Discuss how Toyota used FDM in Design and Testing.	4	4	3	1
b)	Discuss the Strengths and weaknesses of SLS process.	4	3	4	1
c)	Discuss the application of additive manufacturing in customized Implants and Prosthesis.	4	4	5	1

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

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	30%
iii)	Blooms Taxonomy Level – 3 & 4	50%
