



B.E. DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2018)

Seventh Semester

AUTOMOBILE ENGINEERING

U18AUE0008: Additive Manufacturing and Tooling

COURSE OUTCOMES

- CO1:** Classify the concepts and terminologies of additive manufacturing
CO2: Apply the reverse engineering concepts for design development
CO3: Identify the variety of additive manufacturing techniques based on end-product applications
CO4: Design and develop newer tooling models
CO5: Familiarize with cutting-edge technologies in rapid tooling and manufacturing
CO6: Analyze the cases relevant to Additive Manufacturing

Time: Three Hours

Maximum Marks: 100

Answer all the Questions: -

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

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|---|-----|-------------------|
| 1. In what way rapid prototyping is important in industries? | CO1 | [K ₂] |
| 2. List any four advantages of RP in product design and development. | CO1 | [K ₂] |
| 3. Explain the term Reverse engineering with examples. | CO2 | [K ₃] |
| 4. Name any four different types of data formats. | CO2 | [K ₂] |
| 5. List a few applications of liquid-based RP systems. | CO6 | [K ₂] |
| 6. Illustrate the advantages of solid-based RP systems. | CO3 | [K ₂] |
| 7. Name some powder-based rapid prototyping systems. | CO4 | [K ₂] |
| 8. Differentiate soft tooling and hard tooling. | CO4 | [K ₂] |
| 9. Justify the need for rapid prototyping. | CO5 | [K ₂] |
| 10. How does aerospace technology make use of rapid tooling applications? | CO6 | [K ₂] |

Answer any FIVE Questions: -

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

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|---|---|-----|-------------------|
| 11. a) Draw the outline showing the history of the development of RP systems around the world. | 8 | CO1 | [K ₂] |
| b) Enumerate the requirements of new product development strategies. Explain the critical factor affecting the process. | 8 | CO1 | [K ₂] |

12.	a)	Discuss the role of Computer Aided Design technology in the development of the Additive Manufacturing Process.	8	CO2	[K ₃]
	b)	Enlist the role of other associated technologies for further improvement of AM systems.	8	CO2	[K ₄]
13.	a)	Explain any one type of liquid-based additive manufacturing system.	8	CO3	[K ₂]
	b)	Discuss the various pre-processing and post-processing work to be done to produce the prototype models.	8	CO3	[K ₂]
14.	a)	Discuss one suitable solid-based RP system for specific applications.	8	CO3	[K ₃]
	b)	Describe the application of 3-D printing in the medical field with a neat sketch.	8	CO6	[K ₂]
15.	a)	Describe the best powder-based additive manufacturing system.	8	CO3	[K ₂]
	b)	Explain the application of rapid prototype tools in manufacturing and tooling.	8	CO4	[K ₂]
16.	a)	Compare 'Direct' and 'Indirect tooling' with classic examples.	8	CO5	[K ₄]
	b)	Discuss the process of making a rapid tool for blow moulding. Assume your own example as the product.	8	CO6	[K ₃]
