



Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S8 (R,S) Exam April 2025 (2019 Scheme)

Course Code: MET468**Course Name: ADDITIVE MANUFACTURING****Max. Marks: 100****Duration: 3 Hours****PART A***Answer all questions, each carries 3 marks.*

Marks

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|----|---|-----|
| 1 | Define Additive manufacturing and explain the qualification criteria for a process to be qualify as additive manufacturing. | (3) |
| 2 | Write a note on the impact of additive manufacturing on product development. | (3) |
| 3 | Explain the concept of uniform slicing. | (3) |
| 4 | What are the advantages of Part orientation? | (3) |
| 5 | What are the advantages and disadvantages of Laminated Object Manufacturing (LOM)? | (3) |
| 6 | What are the materials used in Fused Deposition Modelling (FDM)? | (3) |
| 7 | Illustrate with an example the STL file format. | (3) |
| 8 | What are the advantages and disadvantages of 3DP? | (3) |
| 9 | What are the benefits of rapid tooling? | (3) |
| 10 | List out the applications of additive manufacturing in Aerospace industry? | (3) |

PART B*Answer any one full question from each module, each carries 14 marks.***Module I**

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|----|---|-----|
| 11 | a) Explain the steps in AM process chain. | (8) |
| | b) Write a note on the benefits and applications of AM. | (6) |

OR

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| 12 | a) Explain in detail the classification of additive manufacturing process on the basis of materials used. | (8) |
| | b) Compare and contrast Additive, Subtractive and Formative philosophies in manufacturing. | (6) |

Module II

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|----|--|-----|
| 13 | a) Explain model slicing and slicing methodologies? | (8) |
| | b) Explain about data format and data interfacing in additive manufacturing. | (6) |

OR

- 14 a) Explain tool path generation. What are the common tool paths used in AM process. (8)
- b) Explain the features of any one slicing software. (6)

Module III

- 15 a) With neat sketch, explain the working principle and process, advantages and limitations of Selective Laser Sintering (SLS). (8)
- b) Brief about strength, weakness and applications of SLA. (6)

OR

- 16 a) With the help of neat sketch explain the process, working principle, advantages and limitations of FDM. (8)
- b) Write a short note on the materials used for SLS. (6)

Module IV

- 17 a) Explain in detail the different STL file problems. (8)
- b) Explain the process of Material jetting with a neat sketch. (6)

OR

- 18 a) Explain with a neat sketch the process, working principle, advantages and limitations of Selection Laser Melting (SLM). (8)
- b) Explain any two newly proposed file formats used other than STL. (6)

Module V

- 19 a) Discuss in detail about the main aspects Rapid prototyping wheel. (8)
- b) Explain direct tooling and indirect tooling with suitable examples. (6)

OR

- 20 a) Explain the biomedical applications of AM. (8)
- b) Discuss about the benefits of Rapid prototyping. (6)
