

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech Degree Regular Examination June 2023 (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 | What are the applications of Additive Manufacturing (AM)? | (3) |
| 2 | What is the impact of Additive Manufacturing on Product Development? | (3) |
| 3 | What are the advantages of Part orientation? | (3) |
| 4 | List the names of slicing software employed in Additive Manufacturing. | (3) |
| 5 | What are the process parameters associated with Fused Deposition Modelling? | (3) |
| 6 | What are the materials used in Selective Laser Sintering? | (3) |
| 7 | What are the merits of Selective Laser Melting? | (3) |
| 8 | What is STL file? | (3) |
| 9 | Write a note on direct processes. | (3) |
| 10 | List the applications of rapid prototyping in automotive sector. | (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 benefits and challenges of AM. | (6) |

OR

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| 12 | a) Classify and explain the AM process. | (10) |
| | b) Write a note on the materials used in additive manufacturing. | (4) |

Module II

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| 13 | a) What are support structures in AM? Explain the need of support structures in AM with illustrations. | (8) |
| | b) What is part orientation? Explain the considerations for selecting part orientation. | (6) |

OR

- 14 a) Explain tool path generation. What are the common tool paths used in AM process. (8)
b) Explain model slicing and slicing methodologies. (6)

Module III

- 15 a) Explain the working principle and process of Electron Beam Melting (EBM). (8)
b) Brief about strength, weakness, and applications of Stereo Lithography (SLA). (6)

OR

- 16 a) Explain the working principle and process of Laser Engineering Net Shaping (LENS). (8)
b) Brief about the strength, weakness, and applications of Laminated Object Manufacturing (LOM). (6)

Module IV

- 17 a) Explain the process, strength, and weakness of 3D Printing (3DP). (8)
b) Explain any two translators used in place of STL? (6)

OR

- 18 a) With the help of illustration, explain the various STL file problems. (8)
b) Explain the working principle and application of SLM. (6)

Module V

- 19 a) With suitable examples, explain the application of rapid prototyping in aerospace sector. (8)
b) Brief about rapid tooling with examples. (6)

OR

- 20 a) With the help of examples, explain the application of additive manufacturing in biomedical sector. (8)
b) Explain direct tooling and indirect tooling with suitable examples. (6)
