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1200MET306122401



Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (S, FE) / S6 (PT) (S, FE) Examination December 2024 (2019 Scheme)

Course Code: MET306

Course Name: ADVANCED MANUFACTURING ENGINEERING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

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| 1 | Explain any three different technics of compaction in Powder metallurgy. | (3) |
| 2 | Differentiate orthogonal and oblique cutting in machining. | (3) |
| 3 | What is meant by interpolation in NC systems? Explain the two types of interpolation of NC cutting tool. | (3) |
| 4 | What are miscellaneous functions in part programming? Write any 4 M – codes with their applications. | (3) |
| 5 | Explain the mechanism of material removal in Ion beam machining. | (3) |
| 6 | Discuss the advantages and disadvantages of Water Jet Machining. | (3) |
| 7 | Compare conventional and high velocity forming methods. | (3) |
| 8 | Explain different types of elastic body waves. | (3) |
| 9 | Discuss the Magneto rheological fluids and its applications. | (3) |
| 10 | Explain the principle of Laminated Object Manufacturing. | (3) |

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

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| 11 | a) With neat sketches explain any three principal methods used to produce metallic powders in powder metallurgy | (10) |
| | b) Illustrate the characteristics of metal powders. | (4) |

OR

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|----|---|------|
| 12 | a) Explain Merchant's theory of metal cutting with neat sketches. | (10) |
| | b) Describe the three different types of chips formed in turning. | (4) |

Module II

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| 13 | a) Explain the working of DDA integrator with schematic diagram and flow chart | (7) |
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- b) Differentiate between open loop and closed loop systems in CNC machining with sketches (7)
- 14 a) Write a PLC ladder logic program to obtain a continuous reciprocating motion for a plunger driven by an electric motor. Assume suitable switches and also draw the input and output diagrams. (7)
- b) Describe the NC coordinate systems and axes in lathes and milling machines with neat sketches. (7)

Module III

- 15 a) Explain the working of ECM with a neat diagram and applications of the process. (7)
- b) Evaluate the effect of process parameters in EDM. (7)

OR

- 16 a) Describe PAM process with neat sketch and explain the process parameters influencing it. Also list the applications. (7)
- b) Discuss the advantages and disadvantages of Electron Beam Machining process. (7)

Module IV

- 17 a) Describe explosive forming techniques with figures, and discuss their applications. (7)
- b) Describe the principle of electro hydraulic forming with a neat sketch. Write its applications. (7)

OR

- 18 a) Explain the effects of high speeds on the stress-strain relationship of steel, and copper with sketches. (7)
- b) Explain electro magnetic forming with a neat sketch. (7)

Module V

- 19 a) Describe stereo-lithography with sketches and its applications. (7)
- b) With a neat sketch explain Selective Laser Sintering. (7)

OR

- 20 a) With a neat sketch explain Diamond turn machining process. (7)
- b) Explain the working of Fused Deposition Modelling with a neat sketch. (7)
