

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. III Year I Semester Regular Examinations December-2025

MACHINING PROCESSES

(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 70

PART-A

(Answer all the Questions 10 x 2 = 20 Marks)

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|---|---|--|-----|----|----|
| 1 | a | Give the equation for cutting ratio. | CO1 | L1 | 2M |
| | b | In an orthogonal turning operation, cutting speed is 8.5 m/min, cutting force 25kg, feed force 9kg, rake angle 10°, feed 0.3mm/rev and chip thickness 0.3mm. Determine the shear angle and chip thickness ratio. | CO1 | L3 | 2M |
| | c | Distinguish drilling and boring machines. | CO2 | L2 | 2M |
| | d | Explain the operations performed on slotting machine. | CO2 | L2 | 2M |
| | e | Explain briefly Up-milling process. | CO3 | L2 | 2M |
| | f | How grinding machines are classified? | CO3 | L2 | 2M |
| | g | Explain the working principle of Abrasive Jet Machining (AJM). | CO4 | L2 | 2M |
| | h | Illustrate the advantages of EDM and WEDM. | CO4 | L2 | 2M |
| | i | Write the advantages, disadvantages Plasma Arc Machining (PAM). | CO5 | L2 | 2M |
| | j | Discuss the ECH tool construction. | CO5 | L2 | 2M |

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

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|---|---|---|-----|----|----|
| 2 | a | Explain basic elements in metal cutting with a neat sketch. | CO1 | L2 | 5M |
| | b | How can you classify cutting tools and define the single point cutting tool elements? | CO1 | L1 | 5M |

OR

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| 3 | | Describe the factors affecting tool life and give Taylor's tool life equation. | CO1 | L2 | 10M |
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UNIT-II

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|---|---|--|-----|----|----|
| 4 | a | Define the terms "Drilling" and "drill". | CO2 | L1 | 5M |
| | b | Name the different types of the drilling machines? How the drilling machine specified? | CO2 | L1 | 5M |

OR

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|---|---|--|-----|----|----|
| 5 | a | What do you understand by the term "Boring"? How are boring machines classified? | CO2 | L2 | 5M |
| | b | Discuss briefly with neat sketch, a horizontal boring machine | CO2 | L2 | 5M |

UNIT-III

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|---|---|--|-----|----|----|
| 6 | a | Define the term i) Grinding, ii) rough grinding and iii) precision grinding. | CO3 | L1 | 5M |
| | b | How the grinding is classified? | CO3 | L2 | 5M |

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| 7 | | With a neat sketch, explain construction and working of tool and cutter grinding machine. | CO3 | L2 | 10M |
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UNIT-IV

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| 8 | a | Explain the working principle of water jet machining (WJM) | CO4 | L2 | 5M |
| | b | What are the advantages, disadvantages and applications of water jet machining (WJM)? | CO4 | L1 | 5M |

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|---|---|--|-----|----|----|
| 9 | a | With a neat sketch, explain the working of a Wire Electrical Discharge Machining Process (WEDM). | CO4 | L2 | 5M |
| | b | List the advantages and disadvantages of WIRE Electrical Discharge machining | CO4 | L2 | 5M |

UNIT-V

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|----|--|--|-----|----|-----|
| 10 | | Explain the parts and working principle of the Electro Chemical Grinding (ECG) process with a schematic diagram. | CO5 | L2 | 10M |
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OR

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|----|--|---|-----|----|-----|
| 11 | | Differentiate between Electron Beam Machining (EBM) and Laser Beam Machining (LBM). | CO5 | L2 | 10M |
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