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## INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
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### III B.Tech I Sem Supply End Examination, August 2022
### Metrology and Machine Tools
(MECH)

Time: 3 Hours.                                          Max. Marks: 70

Note: 1. Question paper consists: Part-A and Part-B.
2. In Part – A, answer all questions which carries 20 marks.
3. In Part – B, answer any one question from each unit.
   Each question carries 10 marks and may have a, b as sub questions.

## PART- A
(10*2 Marks = 20 Marks)

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|---|---|---|---|---|---|
| 1. | a) | Mention any two properties of a good cutting fluid. | 2M | CO1 | BL1 |
| | b) | How a lathe is specified? | 2M | CO1 | BL1 |
| | c) | List out any five drilling machine operations. | 2M | CO2 | BL1 |
| | d) | Differentiate between drilling and boring. | 2M | CO2 | BL2 |
| | e) | What is gang drilling? | 2M | CO3 | BL1 |
| | f) | List out various super finishing operations. | 2M | CO3 | BL1 |
| | g) | Define tolerance. | 2M | CO4 | BL1 |
| | h) | Define Taylor's principle of gauge design. | 2M | CO4 | BL1 |
| | i) | Differentiate between roughness and waviness. | 2M | CO5 | BL2 |
| | j) | What do you mean by Best size wire? | 2M | CO5 | BL1 |

## PART- B
(10*5 Marks = 50 Marks)

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| 2 | a) | Differentiate between orthogonal cutting and oblique cutting. | 5M | CO1 | BL2 |
| | b) | What are the conditions favorable for built-up-edge formation? | 5M | CO1 | BL1 |

OR

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|---|---|---|---|---|---|
| 3 | | Derive Merchant's analysis of metal cutting and the various forces. | 10M | CO1 | BL6 |

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|---|---|---|---|---|---|
| 4 | a) | Briefly explain the nomenclature of drill bit with a neat sketch. | 5M | CO2 | BL4 |
| | b) | Explain with a neat sketch, quick return mechanism of a shaper. | 5M | CO2 | BL4 |

OR

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| 5 | | Explain briefly the various operations that can be performed on a planar machine. | 10M | CO2 | BL4 |

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|---|---|---|---|---|---|---|
| 6 | a) | Sketch different indexing methods in machine tools. | 5M | CO3 | BL1 |
| | b) | How a grinding wheel is selected? Explain with a suitable example. | 5M | CO3 | BL4 |

**OR**

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| 7 | | With the help of a neat sketch, describe the basic principle of milling machine. | 10M | CO3 | BL2 |

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|---|---|---|---|---|---|---|
| 8 | a) | Write short notes on Geometric Dimensional Tolerances. | 5M | CO4 | BL1 |
| | b) | Describe with a neat sketch hole and shaft basis system. | 5M | CO4 | BL2 |

**OR**

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| 9 | | Explain the working principle of auto collimator with a neat sketch. | 10M | CO4 | BL4 |

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| 10 | a) | Explain with a neat sketch, Talysurf surface meter. | 5M | CO5 | BL4 |
| | b) | Explain the working principle of coordinate measuring machine. | 5M | CO5 | BL4 |

**OR**

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|---|---|---|---|---|---|---|
| 11 | | Explain the two wire method of measuring the effective diameter of the screw thread. | 10M | CO5 | BL4 |

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