

Code No: 115EE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, November - 2015

MACHINE TOOLS

(Common to ME, MCT, MSNT)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A (25 Marks)

- | | | |
|------|---|-----|
| 1.a) | Discuss the variables affecting tool life. | [2] |
| b) | Explain requirement of tool materials? | [3] |
| c) | Discuss about attachment of lathe. | [2] |
| d) | What are the main parts capstan and turret lathes? | [3] |
| e) | List out the types of boring machine. | [2] |
| f) | List the advantages of shapers. | [3] |
| g) | Describe a 'milling cutter'. | [2] |
| h) | Define honing process. | [3] |
| i) | What is the difference between rough grinding and precision grinding? | [2] |
| j) | Define grinding operation. | [3] |

PART - B (50 Marks)

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|-----------|---|-------|
| 2.a) | Describe basic requirements of machining. | |
| b) | Explain the construction of merchant force diagram. | [5+5] |
| OR | | |
| 3.a) | List out various tool materials and explain their applications. | |
| b) | Explain the use of chip breakers in metal cutting. | [5+5] |
| 4.a) | Explain the principal features of automatic lathes. | |
| b) | Discuss about the thread turning attachment on lathe. | [5+5] |
| OR | | |
| 5.a) | Differentiate between single spindle and multi spindle automatic lathes. | |
| b) | Discuss the working of various tool holding devices of lathe. | [5+5] |
| 6.a) | Explain various operations performed in drilling machine. | |
| b) | Sketch and explain the working of hydraulic drive of a horizontal shaper. | [5+5] |
| OR | | |
| 7.a) | What is the planner? Illustrate and describe its working principle. | |
| b) | Explain operation of vertical boring machine. | [5+5] |
| 8.a) | Sketch and describe a vertical milling machine. | |
| b) | List the product applications of lapping process. | [5+5] |
| OR | | |
| 9.a) | With the help of a neat diagram, explain the honing process. | |
| b) | Explain the factors to be considered while selecting a milling cutter. | [5+5] |

- 10.a) Sketch and explain the three methods of external cylindrical centre less grinding.
b) Explain different types of abrasives used in grinding wheel. [5+5]

OR

- 11.a) Differentiate between traverse and plunge grinding.
b) Explain with neat sketch
i) Centre less grinding ii) Internal grinding [4+6]

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