

**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 (30 Marks)**

- 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 lapping 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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