

Code :R7310304

**R7**

**III B.Tech I Semester(R07) Supplementary Examinations, May 2011**  
**MACHINE TOOLS**  
**(Mechanical Engineering)**

Time: 3 hours

Max Marks: 80

**Answer any FIVE questions**  
**All questions carry equal marks**

\*\*\*\*\*

1. (a) How is the chip formed in metal cutting? Explain the terms 'shear plane' and 'shear zone'.  
(b) What do you understand from the terms 'Tool life'? What are the main factors which influence the tool life?
2. (a) Write short notes on the following:
  - i. 4 - jaw independent chuck
  - ii. Magnetic chuck
  - iii. Collet chuck.(b) What is a Knee Tool holder? Describe with help of a sketch the knee Tool with micrometer adjustment.
3. (a) What are the common work holding devices used in a shaper? Give a few examples to illustrate the use of these devices.  
(b) Explain the working of a slotted disc mechanism for driving the ram of a slotter.
4. (a) Sketch and explain the following allied operations reaming, counter-boring, counter-sinking and spot facing.  
(b) What is a horizontal boring machine? With help of a block diagram, describe the main features of a horizontal boring machine.
5. (a) What is a plain milling machine? Describe its main features with help of a block diagram.  
(b) Explain the following with respect to their construction, operation and applications.
  - i. Plain milling machine
  - ii. Side milling machine
  - iii. End milling machine.
6. (a) What do you understand from grain, grit, structure and grade of a grinding wheel, explain?  
(b) Describe the construction and working of a tool and cutter grinder with neat diagram.
7. (a) What is lapping? How it is done? How many types of lapping operations are there? Explain.  
(b) How broaching is done on horizontal pull-type broaching machines?
8. (a) What essential factors will you consider while designing a jig or a fixture?  
(b) What are locating devices or locators? Which factors govern the selection of a locator?

\*\*\*\*\*