

**III B.Tech II Semester Supplementary Examinations,
November/December 2005
ADVANCED MANUFACTURING TECHNOLOGY
(Mechatronics)**

Time: 3 hours

Max Marks: 80

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

1. (a) Discuss the main requirements of cutting tool materials.
(b) Define tool wear and explain the reasons of tool failure. [8+8]
2. (a) How a centre lathe is specified? Discuss.
(b) What are constructional features of tail stock? Explain with the help of neat sketch. [6+10]
3. (a) How do you specify the size of a shaper? Describe the constructional features of a shaper.
(b) What are the functions of a slotter? Compare it with shaper and planner. [10+6]
4. (a) What is the function of the tap drill? How is the tap drill size found?
(b) Explain briefly the significance of the following parts in a twist drill
 - i. Webs
 - ii. Shank
 - iii. Body
 - iv. Dead centre[8+8]
5. With the help of neat sketch explain the working of a Vertical column milling machine. Discuss the important operations that can be performed on this machine. [16]
6. (a) Define and explain the following terms:
 - i. Grinding Ratio
 - ii. Truing
 - iii. Dressing(b) Which type of grinding processes is suitable for machining the carbide work pieces and explain why? [9+7]
7. (a) What are the various types of clamps and methods of clamping? Explain briefly.

- (b) Calculate the indexing requirement for 127 divisions on a milling machine equipped with a differential indexing head. The index plates available are

Plate No.1:	15	16	17	18	19	20 holes
Plate No.2:	21	23	27	19	31	33 holes
Plate No.3:	37	39	41	43	47	49 holes

[8+8]

8. (a) Explain the applications of Ultrasonic Machining process.
- (b) Discuss the following terms with respect to Electron Beam Machining.
- i. Surface tension.
 - ii. Back pressure of evaporating atoms
 - iii. Electron pressure
 - iv. Hydrostatic pressure of molten metal.

[8+8]
