

IV B.Tech I Semester Regular Examinations, April/May 2005
MACHINE TOOL DESIGN
(Production Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) What are transfer machines? Where do we use transfer machines? Discuss the important features of transfer machines.
(b) Discuss the kinematic mechanisms of any one general purpose machine tools.
2. (a) What is ray diagram? Explain the steps involved in design of ray diagram for machine tool gear box.
(b) Explain the following:
 - i. Selection of highest and lowest speeds for a machine tool.
 - ii. Standardization of speeds and feeds for a machine tools.
3. Design a 12-speed gear box with a minimum speed of 72 rpm and speed ratio of 1.26. The power to be transmitted is 7.5 kW.
4. (a) Discuss the various steps involved in the analysis of drilling machine bed and column.
(b) What is meant by stepped and stepless regulation? Discuss them briefly.
5. (a) What are the various materials used for structure of a milling machine? Discuss their characteristics.
(b) Describe the design procedure of lathe beds.
6. (a) Draw the sketch of head stock spindle of a lathe machine tool and describe its working.
(b) Enumerate the differences between hydrostatic bearings and rolling contact bearings.
7. (a) What are the different types of accumulators? Discuss any one type.
(b) Discuss the working principle of hydro copying machine.
8. Draw the neat sketches of the following valves used in machine tools and explain briefly:
 - (a) Multi position valve
 - (b) Relief valve
