

III B.Tech II Semester Supplementary Examinations, Apr/May 2008
MACHINE TOOLS
(Mechanical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Discuss about various cutting tool materials. [8]
(b) What is machine tool? How it differs from machine? [8]
2. (a) Sketch and explain the working of tailstock of lathe. [10]
(b) Explain the major types of operations that can be performed. [6]
3. (a) What is meant by tool layout of a turret lathe? Discuss [8]
(b) Enumerate various rules, which must be followed while laying out sequence of operations for a turret lathe. [8]
4. (a) Describe working and construction of crank quick return mechanism of a 8m shaper? [10]
(b) How will you adjust the length of stroke and ram position in shaper? [6]
5. (a) Explain the various operations that can be performed on a drilling machine [8]
(b) Write a brief note a vertical boring mill. [8]
6. (a) Explain the applications and differences with neat sketches, the following with reference to milling: [10]
 - i. Straddle milling
 - ii. Gang milling
(b) Sketch typical set up for [6]
 - i. Reciprocal milling
 - ii. String milling
7. (a) List the various types of special grinding machines. [8]
(b) Classify and explain the various centre type cylindrical grinding machine. [8]
8. (a) What are the elements of Jigs and Fixture and explain briefly. [8]
(b) State the differences in the function and design of Jigs and Fixtures. [8]

III B.Tech II Semester Supplementary Examinations, Apr/May 2008
MACHINE TOOLS
(Mechanical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Differentiate orthogonal cutting and oblique cutting. [6]
(b) In orthogonal cutting of a mild steel bar 60mm diameter on a lathe a feed of 0.8mm /rev was used. A continuous chip of 1.4mm was removed at a rotational speed of 80rpm. Calculate total length of chip removed in one minute? [10]
2. Write briefly about following [4x4=16]
 - (a) Face plate
 - (b) Angle plate
 - (c) Lathe carriers
 - (d) Lathe centers
3. Describe single spindle automatic in detail with help of neat sketch. [16]
4. (a) Write about feed mechanism used in planer. [8]
(b) Discuss briefly about reversible motor mechanism used for table in planer [8]
5. (a) Is it possible to correct an out of round hole with a reamer? If not, give reasons. If possible specify the type of reamer used for the purpose. [10]
(b) Write a short note on lip, helix and rake angles in drilling. [6]
6. (a) Explain the characteristics that distinguish a milling process from other machining processes. [8]
(b) Describe the differences between a lathe and milling machine in terms of the types of surfaces generated, the types of tools used and applicability for general and production applications. [8]
7. (a) What are the various abrasive machining operations you are familiar with? Explain their applications & limitations. [8]
(b) What for lapping is used? How much stock is left for lapping? How does it differ from grinding? What are its advantages and disadvantages? [8]
8. (a) How a broaching machine is specified? [3]
(b) Why robust fixtures are required to support jobs to be broached? [4]
(c) How much stock is removed by tooth on a broach? [4]
(d) How the length of a broach is determined? [5]

III B.Tech II Semester Supplementary Examinations, Apr/May 2008
MACHINE TOOLS
(Mechanical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Define term “Machineability” Explain how it is influenced by various factors? [8]
(b) Discuss various methods of applying cutting fluid. [8]
2. (a) Describe briefly about taper turning methods? [8]
(b) What are the different types of Lathe attachments? Discuss them briefly. [8]
3. Describe briefly about following holders used in capstan lathe. [4x4=16]
 - (a) Knurling tool holder
 - (b) Tap holder
 - (c) Recessing tool holder
 - (d) V-steady box tool holder
4. (a) Derive an expression for machining time calculations for shaper? [6]
(b) Find the time required for taking a complete cut on plate 600x900mm, if the cutting speed is 9m/min. The return time to cutting time ratio is 1:4, and the feed is 3mm, The clearance at each end is 75mm. [10]
5. (a) Explain clearly what is meant by Jig boring. [8]
(b) Explain clearly about the hole location procedure in drilling and boring operations. [8]
6. What are the various work holding devices used in milling? Explain their relative applications and disadvantages. [16]
7. (a) What are the various abrasive machining operations you are familiar with? Explain their applications & limitations. [8]
(b) What for lapping is used? How much stock is left for lapping? How does it differ from grinding? What are its advantages and disadvantages? [8]
8. (a) What do you understand by location of a piece and what are the important principles of location and the type of locations commonly used? [8]
(b) What do you understand by principle of least points and principle of least positions [8]

III B.Tech II Semester Supplementary Examinations, Apr/May 2008
MACHINE TOOLS
(Mechanical Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Derive an expression for optimum value of cutting speed. [8]
(b) While machining a mild steel bar with H.S.S tool the Cutting speed is 32m/min, tool life is 50 min, If cutting speed is increased by 50%, how tool life is affected. Take $n=0.2$. [8]
2. (a) Explain, with the help of neat sketch, the working principle of Lathe machine. [12]
(b) How is size of lathe specified? [4]
3. (a) What is meant by tool layout? Explain briefly [8]
(b) Describe in brief the types of head stocks used on semi automatic and automatic machines. [8]
4. (a) Describe working and construction of crank quick return mechanism of a 8m shaper? [10]
(b) How will you adjust the length of stroke and ram position in shaper? [6]
5. What are different types of drills used? Explain the function of each type of drill [16]
6. Explain with the help of a line diagram the construction and working principle of a vertical milling machine. State the advantages and disadvantages along with application. [16]
7. Write a short note on the following [4x4=16]
 - (a) Brazed carbide tools
 - (b) Grade of grinding wheel
 - (c) Geometry of a single point turning tool
 - (d) Surface grinding machines
8. (a) What do you understand by fool-proofing in connection with locating principles for jigs and fixtures? [8]
(b) What are the advantages of locating a piece against an inclined surface compared to particular plane? [8]
