

Code No: R31036

**R10**

**Set No: 1**

III B.Tech. I Semester Regular Examinations, November/December - 2012

**METAL CUTTING & MACHINE TOOLS**

(Mechanical Engineering)

**Time: 3 Hours**

**Max Marks: 75**

Answer any FIVE Questions  
All Questions carry equal marks

\*\*\*\*\*

1. (a) Explain the nomenclature of a single point cutting tool.  
(b) What are the adverse effects of the built-up edge formation?
2. Explain the working principle of a lathe. What are the operations that can be performed on lathe?
3. With the help of block diagram, explain the principle parts of a double housing planer.
4. (a) How do you specify a drilling machine?  
(b) What is a boring operation? Explain how is it performed.
5. (a) Write the advantages of carbide-tipped milling cutters.  
(b) A steel work piece is to be milled. Metal removal rate is  $30 \text{ cm}^3/\text{min}$ . Depth of cut is 5 mm and width of cut is 100 mm. Find the table speed.
6. Sketch and explain the following grinding processes: Form Grinding, Gear tooth grinding, Thread grinding and Cam grinding.
7. (a) What is an indexing jig? What are the various kinds of indexing devices commonly used?  
(b) What are the advantages and disadvantages of conical locators?
8. (a) List out the advantages of CNC systems over conventional NC systems.  
(b) What are the applications of CNC machines? Explain.

\*\*\*\*\*

1 of 1



Code No: R31036

**R10**

**Set No: 2**

III B.Tech. I Semester Regular Examinations, November/December - 2012

**METAL CUTTING & MACHINE TOOLS**

(Mechanical Engineering)

**Time: 3 Hours**

**Max Marks: 75**

Answer any FIVE Questions  
All Questions carry equal marks

\*\*\*\*\*

1. Describe the Merchant's force diagram and state its significance in machining.
2. Describe the following parts of a lathe in detail:
  - (a) Apron
  - (b) Cross slide
  - (c) Tool post
3. Explain the mechanism behind the working of a shaper in detail.
4. (a) What is meant by deep hole drilling? Explain.  
(b) Name a few applications of deep hole drilling.
5. (a) Sketch and Describe Drum type milling machine.  
(b) What are the machining parameters of a milling machine?
6. (a) What is meant by the grain size of an abrasive material?  
(b) What is meant by grade and structure of grinding wheel?  
(c) Define Grinding Ratio. Explain its significance.
7. Discuss the principles of design of jigs and fixtures.
8. (a) Explain the working of a NC machine tool.  
(b) What is the coordinate system used for CNC milling machine?

\*\*\*\*\*



Code No: R31036

**R10**

**Set No: 3**

III B.Tech. I Semester Regular Examinations, November/December - 2012

**METAL CUTTING & MACHINE TOOLS**

(Mechanical Engineering)

**Time: 3 Hours**

**Max Marks: 75**

Answer any FIVE Questions  
All Questions carry equal marks

\*\*\*\*\*

1. Write in detail about the following:
  - (a) Discontinuous chips
  - (b) Continuous chips
  - (c) Builtup edge formation
2. (a) How do you specify a Lathe?  
(b) What is the role of cam design in automatic lathe operation ?
3. What are the different operations that can be performed on a shaper? Explain.
4. (a) Discuss the nomenclature of Twist Drill.  
(b) How do you calculate machining time in boring?
5. Describe the following operations with sketches.
  - (i) Peripheral milling and
  - (ii) Face milling
6. What is centerless grinding? Where is it applicable? Explain its advantages and disadvantages.
7. (a) What are the safety factors related to design of jigs and fixture?  
(b) On what type of work are swinging clamps used?
8. (a) What are the differences between CNC machines and conventional machines?  
(b) What factors do justify the need of CNC machines? Explain.

\*\*\*\*\*



Code No: R31036

**R10**

**Set No: 4**

III B.Tech. I Semester Regular Examinations, November/December - 2012

**METAL CUTTING & MACHINE TOOLS**

(Mechanical Engineering)

**Time: 3 Hours**

**Max Marks: 75**

Answer any FIVE Questions  
All Questions carry equal marks

\*\*\*\*\*

1. (a) What is the effect of machining parameters on tool life?  
(b) What are the differences between oblique cutting and orthogonal cutting? Give a few examples for each.
2. (a) What are the different types of taper turning methods? Explain them with neat sketches.  
(b) What are the principle features of automatic lathes?
3. (a) How do you specify a planer?  
(b) How will you hold the work on planers? What are the points that must be remembered while doing this task?
4. (a) How do you classify drilling machines and explain various operations that can be performed on a drilling machine?  
(b) Explain the working of gang drilling machine with a neat sketch.
5. Write a short note on the following milling operations  
(a) Straddle milling                      (b) Gang milling                      (c) String milling
6. (a) How do you specify a grinding wheel?  
(b) What factors do you take into consideration while selecting a grinding wheel?
7. (a) Distinguish between a jig and a fixture.  
(b) Explain the principles of location and clamping.
8. (a) What are the functions of a CNC controller?  
(b) Explain the constructional features of a CNC machine.

\*\*\*\*\*

