

KONGUNADU COLLEGE OF ENGINEERING AND TECHNOLOGY

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DEPARTMENT OF MECHANICAL ENGINEERING



ME8451 – MANUFACTURING TECHNOLOGY - II

QUESTION BANK

UNIT-I

THEORY OF METAL CUTTING

PART- A (2 Marks)

1. What are all conditions for using positive rakeangle?
2. When will the negative rake angles beused?
3. Name the factors that contribute to poor surface finish incutting.
4. Classify the types of metal cuttingprocess.
5. What is shearplane?
6. What is cuttingforce?
7. What are the favorable factors for discontinuous chipformation?
8. When will be continuous chipformed?
9. What is chip and mention its differenttypes?
10. What are the favorable factors for continuous chip with buildupedge?
11. Whatis the function of chip breakers? (Nov/Dec2011)
12. Classify the different types of chipbreakers.
13. What are cutting forces acting on the cutting tools? (May/June 2013)
14. Whatis metal removal rate? (May/June 2013)
15. Explain the total energy of the cutting process. (Nov/Dec 2013)
16. Mention the advantage of high machinability.(Nov/Dec 2013)
17. What is machinability index? (May/June 2014)
18. How tool life is defined? (Nov/Dec 2014)

19. What is orthogonal rake system? (May/June2015)

20. Why is lubrication not required while machining cast iron? (May/June2015)

21. Write a short note on Heat zones in cutting. (May/June2016)

22. Write a short note on any two modern tool materials. (May/June2016)

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1. Explain orthogonal cutting and oblique cutting with its neat sketches and compare. (Nov/Dec2011)
2. What is orthogonal rake system? Show the ORS of tool analysis with the help of a sketch? (Nov/Dec2011)
3. What is a chip? What are different types of chips? How are they formed? (May/June2012)
4. Explain the types of chip formed during machining process. (Nov/Dec2012)
5. Write short notes on surface finish. (Nov/Dec2012)
6. Explain the basic actions of cutting fluids. (May/June 2013)
7. What are the different types of cutting fluids used in machining process?
8. What is the measure of metal removing process machinability? What are the factors that affect it? (May/June 2013)
9. Explain the conditions that promote the formation of the following types of chip:
 - (i) Continuous chips without Builtup edge.
 - (ii) Continuous chips with Builtup edge.
 - (iii) Discontinuous chips
10. Explain the geometry of a single point tool with suitable sketches. (May/June 2014)
11. What are the standard angles of cutting tool? Illustrate with all examples? (Nov/Dec2014)
12. How is metal removed in metal cutting? Explain the process with simple sketch. (May/June2015)
13. List the important characteristics of cutting fluids. Explain various types? (May/June 2015)
14. With reference to orthogonal cutting, explain the following terms: shear stress in shear plane, shear strain, cutting ratio, and shear angle. (May/June2016)
15. Explain different types of chips produced in cutting with neat sketches. (May/June 2016)

UNIT – II

TURNING MACHINES

PART – A (2 Mark Questions)

1. What is swing diameter?
2. Write the specifications of a typical lathe.
3. Write down the names of any four lathe accessories.
4. What are the functions of feed rod and leadscrew?
5. Why is it essential that the cutting point of the tool should be level with the spindle center while machining taper on a workpiece?
6. Calculate the time taken for one complete cut on a work piece of 500mm long and 50mm diameter. The cutting speed is 30m/min and the feed rate is 0.5mm/rev.
7. What is the difference between a ram-type turret lathe and saddle type turret lathe?
8. Mention four different types of chucks used in a machine shop.
9. Why were power chucks developed?
10. What is the application of Air operated chuck?
11. What is the purpose of a mandrel? How many types of mandrels are there in common use?

PART – B

1. What is lathe 'carriage'? Explain the various parts of a lathe carriage with a neat diagram.
2. Explain the construction and working principle of a lathe with sketch.
3. Describe some of the methods and equipments for holding work on a lathe.
4. Explain with neat sketches the various methods of turning a taper.
5. Describe a single spindle automatic bar machine.
6. Describe with a neat sketch a turret automatic screw machine.
7. What is a Swiss - Type automatic screw machine? How it functions and what are its main applications?
8. What are the advantages of automatic machines?
9. Discuss the tooling layout for the production of a hexagonal nut in Turret lathe.
10. Explain the feature of multi spindle automatics.

UNIT – III

SHAPER, MILLING AND GEAR CUTTING MACHINES

PART – A (Two Mark Questions)

1. Compare hydraulic shaper with mechanical shaper
2. Write down any four operations performed by a shaper.
3. Mention the operations performed by a planer (Nov/Dec 2011)
4. What is the function of clapper block in a planer?
5. State the differences between a vertical shaper and a slotter.
6. List out the work holding devices for milling machines.
7. What is a shell mill?
8. What is meant by up-milling and downmilling?
9. State the difference between Up-milling and downmilling.
10. What is threadmilling?
11. Write down the rule for gear ratio in differential indexing.
12. How do you specify radial drilling machine. (Nov/Dec 2014)
13. Write down any four operations that can be performed in a drilling machine. (Nov/Dec 2014)
14. What is meant by "Sensitive hand feed"? (May/June 2015)
15. Write the differences between drilling and tapping. (May/June 2015)
16. Why is a jig boring machine called so? (Nov/Dec 2015)
17. Why is sawing a commonly used process? (Nov/Dec 2015)
18. Give the functions of Flutes on Taps. (May/June 2016)
19. List some of materials for broaching tools. (May/June 2016)

PART – B

1. Describe with neat sketch Whitworth quick return mechanism used in a shaper.
2. Explain the hydraulic drive of a horizontal shaper with neat sketches.
3. With a simple sketch, explain the working of the crank and slotted link quick return motion mechanism used in a shaper.
4. Write down any four differences between shaper and planer.
5. Explain with a sketch "Fast and Loose pulleys" quick return mechanism of a planer table.
6. Explain the different types of table drive and feed mechanisms in a planing machine.
7. Explain construction and working of a slotter.
8. Explain different types of work holding devices used in slotting machine.

9. Explain horizontal knee type milling machine with neat sketch.
10. Describe the working mechanism of a universal dividing head, with neat diagrams.
11. With a neat sketch, indicate the various parts of an arbor assembly
12. With a neat sketch, explain the principal parts and angles of a plain milling cutter. Explain them. (Nov/Dec 2012)
13. Explain simple indexing, Compound indexing and differential indexing with suitable example. (May/June 2013)
14. Explain working principle of upright drilling machine. (May/June 2013)
15. Explain twist drill nomenclature. (May/June 2013)
16. Explain the counter boring and counter boring operation. (May/June 2014)
17. Sketch a typical broach and indicate important elements. (May/June 2014)
18. With the help of a neat sketch, discuss the working of continuous surface broaching machine and write its advantages and limitations. (Nov/Dec 2015)
19. Sketch a typical broach and indicate important elements. (Nov/Dec 2015)
20. Explain the hydraulic drive mechanism of a horizontal shaper with neat sketch. (May/June 2016)

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ABRASIVE PROCESS AND BROACHING**PART – A**

1. What are the types of surfaces that could be produced using plain cylindrical grinders?
2. State the abrasives used in manufacture of grinding wheels. (May/June 2012)
3. What do you mean by loading of grinding wheels?
4. What is meant by dressing and truing? (May/June 2013)
5. Mention four important factors that influence the selection of grinding wheel?
6. What for lapping is used? (Nov/Dec 2013)
7. What are the advantages of honing process? (Nov/Dec 2014)
8. What is roller burnishing process? (Nov/Dec 2014)
9. Classify the various types of grinding machine.
10. What is the use of plunge grinding? (Nov/Dec 2015)
11. What are the grinding points? Sketch the various grinding points? (May/June 2016)
12. What is a tool post grinder? (May/June 2016)

PART – B

1. How do you classify cylindrical grinders? What is the difference between "Plain and Universal" cylindrical grinder?
2. Explain the salient features of a centreless grinding machine and discuss the different operations that can be carried out in it. Mention some advantages.
3. Explain the abrasive jet grinding with diagram.
4. Briefly discuss about the different types of abrasives used in a grinding wheel.
5. Explain the external cylindrical grinding process and surface grinding process.
6. Describe various types of surface grinding machines. (May/June 2011)
7. Explain the Vitrified and Resinoid bonding process. (May/June 2011)
8. Discuss the standard method of specifying a grinding wheel by taking an example.
9. Explain self-sharpening characteristics of grinding wheel. (Nov/Dec 2012)
10. Explain wheel truing and dressing. (Nov/Dec 2012)
11. Describe the use of cutting fluids in grinding. (Nov/Dec 2012)
12. List out various methods used for gear finishing and explain any four methods. (Nov/Dec 2013)
13. Explain with neat sketches the following operation: Honing, Lapping, Super finishing and buffering. (May/June 2013)

CNC MACHINING

PART-A (2MARK QUESTIONS)

1. Define NC.
2. What are the classifications of NC machines?(May/June2012)
3. State the advantages of NCmachines.
4. What is point - to - point (PTP) system?(May/June2013)
5. What are G-codes and M-codes? Give examples.(Nov/Dec2013)
6. What is the role of computer for NC machinetool?
7. Name the various elements of CNC machines.(Nov/Dec2014)
8. List the commonly used coordinate systems of CNC machinetools.
9. What is the difference between incremental and absolute system?(May/June2015)
10. Write down the types of statements in APT language.(May/June2015)
11. List the main elements of NC machine tools. .(May/June2016)
- 12.What do you understand by canned cycle in manual part programming? .(May/June2016)

PART-B

1. Explain NC axis conventions.(Nov/Dec2011)
2. List the various drive systems. Explain the principle of any two drivesystems.
3. Discuss about the following with neat sketch and with suitableexample.
 - (i) Closed loop system and Open loopsystem.
 - (ii) Straight line system and Continuoussystem.
4. How is manual programming of a NC machinedone?
5. What is machining centre? Explain in detail.(Nov/Dec2011)
6. Describe in brief the basic components of a tape-operated NC machinetool.
7. What is the difference between positioning machines and contouringmachines?
8. Explain various types of CMM.(May/June2012)
9. Explain the part programming procedure with a goodexample.
10. List and explain G and M code for turning and millingoperations.
11. Define CNC and DNC. With a help of a diagram explain the working of NCmachine tool.(May/June2012)
12. State a few typical applications where the use of numerical control would bejustified.
13. Discuss the major elements of CNC machine tools.
14. Describe with neat sketch various steps in computer assisted partprogramming.
15. Compare NC machines with CNC machines.(May/June2013)

16. Discuss the important design features of CNC machine tools.

17. Discuss the advantages of computer numerical control system. (May/June 2013)

18. Explain APT geometry and motion statements. (May/June 2014)

19. Write short notes on: (Nov/Dec 2014)

(i) NC machine tool classification

(ii) APT programming structure

(iii) G and M codes

(iv) CNC machine Vs Conventional machine.

20. Write short notes on APT language. (Nov/Dec 2015)

21. Explain the working of NC machine tool with a help of a diagram. (May/June 2015)

22. List the advantages of CNC system over conventional NC system. (Nov/Dec 2016)

23. Explain the various steps to be followed while developing the CNC part programs. (Nov/Dec 2016)

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