Uka Tarsadia University (Diwaliba Polytechnic)
Diploma in Mechanical Engineering
Assignment (Manufacturing Engineering-II-020020301)

Unit-1 Introduction

1. List different types of chip breaker.
2. What does MRR means? Write unit of MRR.
3. State the properties of cutting fluids.
4. Explain about Continuous chip
5. Explain: the scope of manufacturing processes in industries.
6. List the knowledge and skills required for shop floor supervisor in machine tool based industries.
7. Discuss about orthogonal cutting.
8. Write short note on tool dynamometer.
9. Write function and types of chip breakers.
10. Discuss the effect of variables on surface finish
11. List variables which influence the type of chip.
12. Draw sketch of all types of chips.
13. Discuss obstruction type chip breakers.
14. Draw neat sketch of cutting tool dynamometer.
15. Discuss metal forming process.
16. Explain need of cutting fluid.
17. Explain feed and depth of cut.
18. Explain mechanics of metal cutting.
19. Discuss metal generating process.
20. Discuss need of attitudes knowledge and skill for shop floor supervisor in machine tool based industries.
21. Give Difference between orthogonal and oblique cutting.
22. Write advantages of chip breaker.
23. Discuss need and scope of manufacturing processes in industries.
24. List different chips and explain any one.
25. Name factors for continuous chip.
26. List advantages of chip breaker.
27. Discuss about oblique cutting.
28. Discuss properties of cutting fluids.
29. Explain Groove type chip breaker.
30. What does MRR means? Write unit of MRR.
31. List factors for continuous chip with built up edge.
32. List advantages of discontinuous chip.
33. Discuss process of chip formation.
34. Explain briefly merchant's circle diagram.
35. List different cutting variables and explain any one.
36. Explain fundamentals of Material removal rate.

37. Classify metal cutting process and explain any one.
38. State various kinds of chips with their advantages and disadvantages.
39. Discuss force system at cutting tool point.
40. What are the functions of cutting fluid?

Unit-2 Basic machine Tools – I

1. Give function of tail stock and tool post.
2. List various parts of drilling machine.
3. Explain threading and knurling operation on lathe machine with neat sketch.
4. Write short note on metal removal rate in drilling operation
5. Classify machine tool drive.
6. Explain difference between basic machine tools and special purpose machine tools.
7. Explain tail stock with neat sketch.
8. Classify lathe machine and draw block diagram of lathe machine.
9. List various drilling machine and draw block diagram of simple drilling machine.
10. Discuss about steady rest and follower rest in brief.
11. Discuss about different types of work holding device in lathe machine and explain four jaw chuck with its application.
12. List various work holding devices used in lathe machine.
13. Write about safety precautions in machine tools.
14. Explain half nut mechanism in lathe machine.
15. Explain radial drilling machine with neat sketch.
16. Explain speed, feed and depth of cut on lathe machine.
17. List important parts of lathe machine and explain working principle of lathe machine with diagram.
18. List various drilling operation and explain any two with neat sketch.
19. Explain chuck, collet and face plate in brief.
20. State various methods of taper turning on lathe machine. Explain any two methods of taper turning with diagram.
21. Draw diagram of tail stock.
22. Classify lathe machine.
23. List various work holding devices used in drilling machine.
24. List the name of different operation that we can perform on lathe machine.
25. What is the function of feed rod and tail stock in lathe machine?
26. List the name of various parts of lathe machine.
27. Write the function of half nut mechanism and tumbler mechanism in lathe machine.
28. Write safety rules for drilling machine.
29. One-round bar to be turned from diameter 60 mm to 58 mm with 100 mm in length feed 0.2 mm/revolution. Spindle speed is 200 RPM, calculate machining time.
30. A work piece of 200mm diameter in length is to be provided taper. The maximum diameter of which is 45 mm and small diameter is 30 mm. suggest the angle through which the compound rest must be rotated.
31. Give application of special purpose lathe machine.
32. Explain any three operation performed on lathe machine.
33. List tool holding device used on drilling machine and explain one of them.
34. Differentiate between self-centering chuck and four jaw chuck.
35. Write short note on thread cutting on lathe.

Unit-3 Basic machine Tools – II

1. Explain compound indexing.
2. Explain up milling.
3. Write short note on end milling.
4. Explain Universal milling machine.
5. Write short note on material removal rate during milling operation.
6. Explain Face milling operation.
7. List different milling operations.
8. Explain function of arbour in milling machine.
9. Name different work and tool holding devices in milling machine.
10. Write short note on straddle milling.
11. Explain Vertical milling machine.
12. Briefly explain rotary table or circular milling attachment.
13. Write about specification of milling machine.
14. Write short note on gang milling.
15. Explain Planner type milling machine.
16. Discuss about spindle drive mechanism in milling machine.
17. Explain Plain milling operation.
18. Explain principle of milling machine
19. List different types of milling attachment.
20. Give classification of milling machine.
21. Draw neat sketch of planner type milling machine.
22. Explain Column and knee type milling machine.
23. List different cutter holding devices.
24. Classify different milling cutters.
25. List different parts of milling machine and explain any one.
26. Discus about Angular milling operation.
27. Give difference between up milling and down milling.
28. Draw sketch of angular milling.
29. Write short note on vertical milling attachment.
30. Discuss about Table feed mechanism in milling machine.
31. Explain down milling.
32. Briefly explain plain or simple indexing.
33. Draw neat sketch of side milling operation.
34. Give classification of milling cutters.
35. Write short note on indexing mechanism in milling machine.

Unit-4 Basic machine Tools – III

1. State the difference between shaper and planer machine.
2. Compare hydraulic shaper with mechanical shaper?
3. Name principal parts of knee and column type milling machine.
4. Differentiate between shaper machine and planer machine.
5. What is meant by up-milling and down milling?
6. Write down the operation performed by shaper machine.
7. Draw block diagram of slotting machine with.
8. What are the differences between up milling and down milling?
9. Write various work holding devices in shaper machine.
10. What are the limitations of a milling machine?
11. Write down any four operations performed by a shaper?
12. Mention the operation performed by planer?
13. Name different types of production milling machines.
14. What is the function of clapper block in a planer?
15. State the difference between a vertical shaper and a slotter?
16. What are the common work holding devices used on milling machines?
17. Explain construction of slotting machine.
18. List various operation performed on planer machine and explain one of them.
19. Discuss work holding device used in planning machine.
20. Explain various operation on shaper machine.
21. Classify planning machine and explain standard planer.
22. Explain slotting machine with block diagram.
23. Discuss work holding device used in shaping machine.
24. Explain quick return mechanism of shaper machine with neat sketch.
25. Draw neat sketch of double housing planer and open side planer.
26. Give classification of shaping machine.
27. Draw and explain block diagram of slotting machine.
28. Explain various work holding devices used on shaper machine.
29. Write operation performed on the slotting machine.
30. Write safety precaution while working with shaper machine.
31. Explain any one driving mechanism of planning machine.
32. Explain hydraulic shaper mechanism.
33. Explain whit worth quick return mechanism of shaper machine with neat sketch.
34. Write down construction of planning machine.
35. Explain crank and slotted lever mechanism of shaper machine with neat sketch.

Unit-5 Cutting tools and Tool holders

1. Explain drill tool designation.
2. Explain positive rack, negative rack and zero rack for milling cutter.
3. Define tool life and tool wear.
4. List the safety precaution in machine tools.
5. Explain dry and wet grinding.
6. List various types of cutting tool material.
7. Define carbide insert and give need of carbide insert.
8. Discuss special tool material.
9. List various work holding devices.
10. Write down factor affecting machinability.
11. Name different cutting tool material and in 18 – 4 – 1 HSS cutting tool material, What does 18 denotes?
12. Explain various grinding methods.
13. Sketch single point cutting tool angle and explain purpose of keeping them.
14. Discuss general cutting tool parameter.
15. Explain single point cutting tool with its nomenclature.
16. Write short note on machinability.
17. List various cutting tool material and discuss any two materials.
18. What is carbide insert? Explain need of carbide insert.
19. Write short note on standard milling cutter.
20. Explain different types of tool wear.
21. Discuss various tool holder.
22. Explain drill tool with its nomenclature.
23. Write short note on following types of tool material
    a. High speed steel
    b. Ceramics
24. Write short note on universal tool and cutter grinder.
25. Give need of carbide insert.
26. Write factor affecting tool life.
27. Draw Twist drill geometry.
28. Enlist advantage and Limitation of collet.
29. Discuss Designation of single point cutting tool.
30. Define tool wear and machinability.
31. Give types of carbide tips and state the advantages of carbide tip tools.
32. Write production process of carbide insert.
33. Describe various tool angles for single point cutting tool.
34. Explain various types of collet.
35. Explain milling cutter with its nomenclature.

Unit-6 Automates

1. Draw neat sketch of hexagonal turret.
2. Write down uses of collets.
3. What is SPM? Also write its applications.
4. What is bar feeding mechanism in automatic lathe?
5. List the name of various special purpose machine tools.
6. Write down types of collets and explain any one type from it.
7. Give difference between turret lathe and capstan lathe.
8. Define special purpose lathe machine and explain hydraulic copying lathe machine.
9. Write down advantage and disadvantage of automates.
10. Explain parallel action multi spindle automates with neat sketch.
11. Discuss the need of automation in machine tool industries.
12. Why Automats are used in production? List advantages of Automats.
13. Write advantages of turret lathe.
14. Write the difference between standard machine tools and special purpose machine tools.
15. Write limitation of turret lathe.
16. Give Difference: turret lathe and Centre lathe.
17. Explain multi spindle automates with parallel action.
18. Write down advantages and disadvantages of automates.
19. Write about safety precautions in machine tools.
20. List semiautomatic and automatic lathe machine.
21. Is the productivity of multi-spindle machines higher compared to single spindle automatic lathes? Explain your answer.
22. Compare special purpose machine tools with other automates.
23. Write down the construction of multi spindle lathe with neat sketch.
24. State various types of collet.
25. Explain Automatic, Non Automatic and semiautomatic system.
26. Define special purpose lathe machine and explain Swiss type automates.
27. Explain construction and working principle of single spindle automates.
28. Explain working of turret lathe with the help of neat sketch.
29. List various special purpose machine tools with its application.
30. Write down working principle of capstan and turret lathe and describe various parts of lathe.
31. Explain working of turret lathe with the help of neat sketch.
32. Explain Progressive action multi spindle automates with neat sketch.
33. Write down advantages and limitations of collet.
34. Write advantage and disadvantages of turret and capstan lathe.