GOVT.POLYTECHNIC, MAYURBHANJ

MECHANICAL DEPARTMENT

QUESTION BANK

MANUFACTURING TECHNOLOGY, 4th SEMESTER

MODULE 1 &2

TOOL MATERIALS & CUTTING TOOLS

SHORT ANSWER TYPE QUESTIONS (2 MARKS AND 5 MARKS)

1. What do you understand by orthogonal and oblique cutting? How do they differ from each other?
2. How are the cutting tools classified? Name a few tools of each type.
3. What are the required properties of a good cutting tool?
4. What is hot hardness?
5. Explain the term cutting speed, feed and depth of cut as applicable to metal cutting. How these factors affect the tool life?
6. Write down the composition of HSS.
7. Explain Cutting action of various and tools such as Chisel, hacksaw blade, dies and reamer
8. What are the functions of cutting fluids?
9. What are the required properties of coolants and lubricants.
10. How do you classify cutting fluids?
11. Give examples of a few lubricants.

LONG ANSWER TYPE QUESTIONS (8 MARKS)

1. Draw a neat sketch of a single point cutting tool indicating its complete geometry.
2. Explain the importance and functions of different tool angles and other parameters associated with the geometry of a single point cutting tool.

3. What are the main cutting tool materials? Describe each in brief, stating its principal characteristics and applications.
4. Write composition, properties and applications of any four tool material.

MODULE 3
LATHE MACHINE

SHORT ANSWER TYPE QUESTIONS (2 MARKS AND 5 MARKS)

1. What factors govern the Classification of Lathes ? Describe in brief the various types of Lathes you know.
2. (a) How is the size of a Lathe determined ? (b) Explain the term 'Swing'.
3. Why Lathe beds are made of Cast Iron ?
4. What is a 'Gap bed' ? State its advantages and disadvantages.
5. What is an 'All geared head stock' ?
6. Write short notes on the following : (a) Lathe Spindle, (b) face plate
7. Why Change Gears are used ?
8. Write down the operations that can be carried out in a lathe.
9. What are the safety measures that need to be taken while operating lathe?
10. What is speed, feed and depth of cut in a lathe?
11. How a lathe machine is specified?
12. What are the limitations of a centre lathe?
13. What is the significance of capstan and turret lathe in a production shop?
14. Define multiple tool holder.
15. What is CNC lathe? Write down its various parts and their functions.

LONG ANSWER TYPE QUESTIONS (8 MARKS)

1. Explain, with the help of a neat sketch, the principle of working in a Lathe.
2. Give a neat diagram of an Engine Lathe. Describe and mark its Main parts and Controls.
3. Describe the working of tumbler gear mechanism.
4. Sketch and explain the construction and working of the Tailstock of a Lathe.
5. Explain following operations in details (a) turning (b) facing (c) knurling (d) parting off

6. Explain in detail the methods of taper turning.
7. Describe how thread cutting operation is performed in a lathe.
8. What are the main parts and their functions of a capstan lathe? Illustrate with help of sketches.
9. What are the main parts and their functions of a turret lathe? Illustrate with help of sketches.
10. What are the differences between a capstan and a turret lathe. Explain with the help of suitable sketches.
11. What are the differences between a centre lathe and capstan and turret lathe?
12. Draw the tooling layout for preparation of a hexagonal bolt &bush.

MODULE 4
SHAPER

SHORT ANSWER TYPE QUESTIONS (2 MARKS AND 5 MARKS)

1. Explain, with the help of a neat sketch, the working principle of a Shaper.
2. How is a Shaping machine specified? Explain in detail.
3. How do you classify the different types of Shapers ?
4. How will you adjust the length of stroke and the ram position in a Shaper ?
5. What are the common mechanisms used for quick return of Ram in a Shaper ?
6. Explain the working of a Hydraulic Quick Return Mechanism of a Shaper.
7. How does a Universal Table differ from a plain Shaper Table ?
8. What are the common Operations performed on a Shaper ?
9. Derive an expression for calculating the Cutting Speed of a Shaper. Define feed and depth of cut for a shaper.

LONG ANSWER TYPE QUESTIONS (8 MARKS)

1. Describe, with the help of a suitable diagram, the principal parts of a Shaper and their functions.

2. Describe the working and construction of a Crank and slotted link quick Return Mechanisms of a Shaper.
3. Sketch and describe the construction and working of Tool head of a Shaper.
4. Sketch and describe the working of automatic table feed mechanism of a Shaper.

MODULE 5
PLANNING MACHINE

SHORT ANSWER TYPE QUESTIONS (2 MARKS AND 5 MARKS)

1. What is a planer? Illustrate and describe its working principle.
2. How is a planer specified?
3. How do you classify planer?
4. What are the main operations performed in a planer?
5. How does a planer differ from a shaper?

LONG ANSWER TYPE QUESTIONS (8 MARKS)

1. Draw a block diagram of a standard double housing planner, showing its main parts and briefly describe these parts.
2. What are the common work holding devices used on planer. With the help of a neat sketch describe a planner vice.
3. Explain in detail the Working of tool and tool support in planer.
4. Describe in detail the table drive mechanism in a planer.

MODULE 6
MILLING MACHINE

SHORT ANSWER TYPE QUESTIONS (2 MARKS AND 5 MARKS)

1. What do you understand from the term milling?
2. What is the working principle involved in a milling operation?
3. How is a milling machine specified?
4. How are the milling machine classified?

5. What is fixed bed type milling machine? How do you classify the fixed-bed type milling machines?
6. What are special purpose milling machines ? Which machines are included in this category ? What is a 'Hand milling machine' and where is it used ?
7. How many types of 'Vertical Milling Machines' you know ?
8. What are the advantages of 'Swivelling head' type vertical milling machine over a 'Fixed Head' type ? .
9. What are the purposes for which different attachments are employed on a milling machine ?
10. Describe the construction and working of a hand operated circular milling attachment.
11. How are the following attachments used ?
    (a) Vertical milling attachment. (b) Spiral milling attachment. (c) Slotting attachment. (d) Rack milling attachment.
12. What are the common milling methods ? Compare their relative merits and demerits.
13. What materials are used in the manufacture of milling cutters ?
14. What are the main advantages of using a 'Coarse-teeth' cutter ?
15. Which operations, other than the standard operations, can be performed on a milling machine ?
16. Define the term cutting speed, feed and depth of cut for milling.
17. What are the indexing or dividing heads ? What are their functions ?
18. How do you perform 'differential indexing' ? In what cases it is to be used ?

LONG ANSWER TYPE QUESTIONS (8 MARKS)

1. What is a column and knee type milling machine? Explain with neat sketch. How are the column and knee type milling machines classified ?
2. What is a 'Plain milling machine' ? Describe its main features with the help of a 'Block Diagram'.
3. Make a neat sketch of a Universal Milling Machine and describe its constructional features.
4. Write short notes on the following: (a) An Omniversal Milling Machine. (b) A Fixed-bed type plain milling machine..

5. Describe, with the help of suitable sketches, the various types of vices commonly used on milling machines for holding the jobs.
6. What are the common devices used for clamping the work on a milling machine table ?
7. How do you classify the various types of milling cutters ? Explain each.
8. What are the various standard milling operations ? Explain each with the help of suitable sketches.
9. Sketch and describe the following operations : (a) Slot milling. (b) Keyway milling. (c) Slitting or saw milling. (d) Side milling.
10. Write short notes on the following milling operations. (a) end milling (b) gear milling
11. Explain the construction and working of plain dividing head.
12. With the help of a suitable sketch, explain the working of a Universal dividing head. In what ways it is more advantageous than the plain milling heads ?
13. Explain the procedures of simple and direct indexing.
14. Where the compound indexing ‘is to be used ? What is its procedures and principle?
15. What is CNC milling machine? Describe various parts of a vertical CNC milling machine.

MODULE 7
SLOTTER

SHORT ANSWER TYPE QUESTIONS (2 MARKS AND 5 MARKS)

1. How is a slotting machine specified?
2. How do you classify the slotting machines?
3. Describe in brief the puncher slotter and tool room slotter.
4. Describe the working of a production slotter.
5. What are the operations that can be performed in a slotter?

LONG ANSWER TYPE QUESTIONS (8 MARKS)

1. Describe the main parts and their functions of a slotter.
2. What are the different mechanisms used for driving the ram of a slotting machine? Explain the working of a slotted disc mechanism for driving the ram of a slotter.

MODULE 8

GRINDING

SHORT ANSWER TYPE QUESTIONS (2 MARKS AND 5 MARKS)

1. What is meant by 'Grinding' ? Explain.
2. Which materials are used in the manufacture of grinding wheels ? What properties they impart to the wheel ?
3. What are natural and artificial abrasives ? Why are the latter preferred over the former ?
4. What are the different types of bonds used in the manufacture of abrasive wheels ?
5. What are the common wheel shapes used in grinding work ? Sketch and describe in brief.
6. What are diamond wheels ? Where are they used ?
7. Describe the 'Indian Standards' method of specifying a grinding wheel by ta concrete example.
8. What essential factors you will take into consideration while choosing a grinding wheel ?
9. How do you classify different types of grinding machines ?
10. What is the use of cylindrical grinders ? Explain the principles of cylindrical grinding.
11. How do you classify cylindrical grinders ? What is the difference between 'pla 'universal' cylindrical grinders ? Explain.
12. What are the advantages of centreless grinding over centre type grinding ?
13. What are surface grinders ? What is their specific use ?
14. Write short notes on these surface grinders (a) vertical spindle type (b) horizontal spindle type.
15. What specific functions the following grinding machines perform ? Explain their uses in brief : (a) Face grinder. (b) Way grinder. (c) Wet belt grinder.

LONG ANSWER TYPE QUESTIONS (8 MARKS)

1. Describe in detail the procedures for manufacturing of grinding wheels.
2. What do you understand from 'Grain', 'Grit', 'Structure' and 'Grade' of a grinding wheel ? Explain in detail.
3. Write short notes on: (a) Bench and pedestal grinders. (b) Swing frame grinders. (c) Portable and flexible shaft grinder. (d) Belt grinders.
4. Explain the construction and working of a 'plain' cylindrical grinder with the help of a neat diagram.
5. With the help of a neat diagram, explain the construction and working of a centreless grinder.
6. Explain the principle of centreless grinding. Explain 'Through feed', 'Infeed' and feed' methods of centreless grinding. Where are they used ?
7. Explain with the help of suitable sketches the relative work, wheel and table movements on a reciprocating table type and rotary table type surface grinder. Explain their working.

MODULE 9
INTERNAL MACHINING OPERATIONS

SHORT ANSWER TYPE QUESTIONS (2 MARKS AND 5 MARKS)

1. What do you understand by the term drilling, reaming and boring? How do they differ from each other?
2. How do you classify different types of drilling machines?
3. What are portable drills and where are they used?
4. What is sensitive drill?
5. What is boring operation? How it differs from drilling?
6. How do you classify the boring machines?
7. What are vertical boring machines? Where are they preferred and why?
8. What is broaching?
9. How different types of broaches are classified?
10. Which materials are commonly used for manufacturing broaches?
11. What are the advantages and applications of broaching?

LONG ANSWER TYPE QUESTIONS (8 MARKS)

1. With the help of a neat sketch explain the working of Bench drilling machine.
2. With the help of a neat sketch explain the working of pillar drilling machine.
3. With the help of a neat sketch explain the working of radial drilling machine.
4. What is a horizontal boring machine? With the help of a block diagram describe the main features and principles.
5. Give a neat sketch of an internal pull type broach and indicate the various terms relative to its teeth. Describe these terms in brief. How a push broach differs from a pull broach?
6. Describe pull and push broaching with the help of neat sketches.

MODULE 10
SURFACE FINISH, LAPPING

SHORT ANSWER TYPE QUESTIONS (2 MARKS AND 5 MARKS)

1. What is the purpose of doing the surface finishing operations ?
2. What different surface finishing operations you know ? How are they classified ?
3. What do you understand from the term 'Vehicle' as applied to lapping ? E principle of vertical spindle lapping machine.
4. Describe the process of Hand Lapping.
5. Describe the process of Honing. How lapping and honing differ ?

LONG ANSWER TYPE QUESTIONS (8 MARKS)

1. What is Lapping ? How is it done ? How many types of lapping operations are there ?
2. What is Superfinishing ? How does it differ from lapping and honing ? With the help of a neat diagram, describe the process of Superfinishing.