

ALPHA COLLEGE OF ENGINEERING & TECHNOLOGY

MECHANICAL ENGINEERING DEPARTMENT 3RD SEM 2018

ASSIGNMENTS OF MANUFACTURING PROCESS -1 (2131903)

Chapter 1 – Basic Machine Tools

Sr. No.	Questions	Dec - 09	June - 10	Dec - 10	June - 11	Dec - 11	June - 12	Dec - 12	June - 13	Dec - 13	June - 14	Dec - 14	June - 15
Theory													
1.	Explain the primary and auxiliary motions with reference to machine tool.		07										
2.	Classify machine tools in detail. Explain types of motions in machine tools with examples.			07								07	07
3.	With the help of front-view, top view and side view draw single point cutting Tool geometry.					03							
4.	With the help of sketch only indicate " drive-motion " & " feed motion for following machines: (1) Lathe-M/c. (2) Drill-M/c (3) Shaper-M/c (4) Planer- M/c.					04							
5.	Draw front view, top view and side view of single point cutting tool. Indicate all elements and important angles on it. Identify following tool signature 8-14-6-6-20-15-4.							03					
6.	Define machining process. Give details classification of machining processes. State the factors influencing the selection of the suitable process.							07					
7.	Define a Basic Machine Tool. Classify them What are the general requirements of machine tools?								07				
8.	Explain with neat sketches the Primary cutting motions for lathe, drilling machine, planing machine, shaper, grinder, milling and broaching machine.									07			

Sr. No.	Questions	Dec- 14	Jun - 15
Theory			
1.	Give the classification of machining processes and also discuss the major factors influence the selection of a suitable machining process.	07	
2.	What is Tool Signature and Tool Geometry? Explain importance of tool angles for single point cutting tool in brief.	07	

Chapter 2 – The Lathe

Sr. No.	Questions	Dec - 09	June - 10	Dec - 10	June - 11	Dec - 11	June - 12	Dec - 12	June - 13	Dec - 13	June - 14	Dec - 14	June - 15
		Theory											
1.	Explain different taper turning methods. Explain any two of them.	05	07		07	03	07		07	07			
2.	Explain different operations performed with the help of a lathe.	04	07	07	07		07	07		07	07	07	07
3.	Write short note on different type of chucks used in a lathe.	05				07							
4.	Explain alignment tests for lathe in brief with neat sketch.	05		07		07	07	07	07		07	07	07
5.	Explain parts of engine lathe. List main parts of it and state functions of each part.				07		07					07	
6.	What is a mandrel? Explain different types of mandrels.		07								07		
7.	Explain in brief different types of Lathe-centers used on tailstock side of a lathe machine					04			03				
8.	Explain various work holding devices of lathe machine.						07			07			07
9.	Explain in detail various types of a lathe.							07					
10.	Why different spindle speeds are provided on an engine Lathe? Explain.								07				
11.	What are the essential differences between steady rest and follower rest.								04				
12.	With a neat sketch explain working of back gear arrangement on the lathe machine.									07			
13.	Explain tumbler gear mechanism used in lathe with neat sketch.										07		

14.	Explain the turret indexing mechanism and bar feeding mechanism used in capstan lathe.		07	07									
15.	Explain the difference between Capstan & Turret lathe.					07	07	07	07		07		07
16.	What are the difference between Engine lathe and Turret lathe?		07										

Sr. No.	Questions	Dec - 14	Jun - 15
		Theory	
1.	Explain size of Lathe. Also describe various types of Lathes along with their applications and general specifications.	07	
2.	Describe Turning operation in Lathe Machine. Also discuss Shoulder Turning and Eccentric Turning with neat sketch.	07	
3.	State the purpose of each part on lathe: (1) Face Plate, (2) Lead screw, (3) Steady rest, (4) Chasing dial, (5) Mandrel, (6) Split nut and (7) Tail stock.		07
4.	With help of neat diagram explain the following setup on centre lathe: (1) Use of fixed steady for drilling on end of a long bar. (2) A knurling operation set up. (3) Taper turning by swiveling compound rest.		07
5.	Discuss with neat sketch how are the following alignment tests conducted on lathe: (1) Spindle Centre run out (2) Pitch accuracy of lead screw.		07

Chapter 3 - Drilling Machine

Sr. No.	Questions	Dec - 09	June - 10	Dec - 10	June - 11	Dec - 11	June - 12	Dec - 12	June - 13	Dec - 13	June - 14	Dec - 14	June - 15
Theory													
1.	Enumerate various operations carried out on drilling machine.	07		07						07	07		07
2.	Explain different types of reamers used in drilling.	07											
3.	With figure explain the twist drill nomenclature.		07	07			07						
4.	Enumerate different types of drilling machine. Explain gang drilling machine and multi spindle drilling machine with neat sketch.			07						07			07
5.	Draw neat sketch of radial drilling machine and name its parts, explain its working.				07		07		07				07
6.	Draw a neat schematic diagram of upright drill machine. Describe deep hole drilling.				07						07		
7.	Draw a neat sketch with label of following operation and indicate direction of cutting parameters on it. i) Reaming ii) boring iii) Counter boring iv) Countersinking v) Spot facing vi) Tapping vii) Trepanning.							07					
8.	Compare multi spindle drilling machine and Gang drilling machine.							04					
9.	What could be the possible causes for the following drilling problems?(i) Breaking of drill (ii) Hole too large (iii) production of rough hole and (iv) Breaking down of outer corner of cutting edges.								07				

Sr. No.	Questions	Dec - 14	Jun - 15
Theory			
1.	Enlist various operations carried out on drilling machine. Also explain Tapping, Trepanning and Countersinking.	07	
2.	Explain Radial drilling machine with neat sketch.	07	
3.	List the work holding devices used for holding work on a drilling machine and explain with neat sketch any three.		07
4.	List different type of reamers commonly used on drilling machine and describes with neat sketch any three.		07
Examples			
1.	Determine the time required to drill a hole of 25mm diameter in a cast iron work piece 50mm thick using a high speed steel drill. The cutting speed and feed rate for the operation may be assumed to be 0.50 m/s and 0.5 mm/rev respectively. The drill point angle is 118°m. An approach and over travel may be assumed to be 8mm		07

Chapter 4 - Boring Machine

Sr. No.	Questions	Dec - 09	June - 10	Dec - 10	June - 11	Dec - 11	June - 12	Dec - 12	June - 13	Dec - 13	June - 14	Dec - 14	June - 15
Theory													
1.	Classify boring machine. Explain horizontal boring machine & jig boring machine with neat sketch.	07		07	07	07	07	07		07	07		07
2.	What do you mean by precision boring machine? Explain their characteristics features.				07								
3.	Explain various operations carried out on boring machines.						07					07	

Sr. No.	Questions	Dec - 14	June - 15
Theory			
1.	Write a short note on "Turret Lathe".	07	
2.	Discuss briefly, with a neat sketch, horizontal boring machine.	07	
3.	Give the comparison between boring and reaming. Also describe Precision boring machine with neat sketch.	07	
4.	With help of neat sketch explain vertical boring machine and state function of its parts.		07

Chapter 5- Milling Machines

Sr. No.	Questions	Jun - 10	Dec - 10	Jun - 11	Nov - 11	May - 12	Oct - 12	Dec - 12	Jun - 13	Dec - 13	Jun - 14	Dec - 14	May - 15
Theory													
1.	Explain up-milling and down-milling. List down the advantage of up milling.	07							07				
2.	Write classification of milling machine. Explain principal parts of column & knee type horizontal milling machine with neat sketch.		07									07	
3.	Enumerate various milling operations. Explain any three of them with neat sketch.		07								07		07
4.	Derive the formula for machining time calculation for milling.	07											
5.	Explain universal milling machine with neat sketch.	07				07							
6.	Explain with neat sketch up milling and down milling process. Describe its advantages and limitations.			07									
7.	Draw neat sketch of column & knee type milling machine. Label the main parts. State functions of each part.			07							07		
8.	List milling operations and explain following milling operations. i. Plain milling operation ii. Straddle milling operation iii. Angular milling operation iv. Face milling operation v. Helical milling operation			07									
9.	Explain in brief the various 'Indexing Methods' used on milling machine.				07				07	07			
10.	State the salient features of "Universal-Milling Machine Draw the 'geometry profile generated in the work piece body while taking cuts by following cutters (1) Cylindrical cutter (2) Side and Face cutter (3) Double angle cutter (4) Tee-slot Cutter.				07							07	
11.	Enlist different types of milling cutters. Explain T- Slot milling with neat sketch.								07				
12.	What is the need of alignment test for a machine tool? What tools are used in these tests? List the alignment tests to be carried out on the Milling machine.									07			
13.	Explain the differences between the following : Up milling and Down milling										07	07	07
14.	Distinguish simple indexing and compound indexing of a milling machine.										07		07
Examples													
1	A slot of 30mm X 30mm is to be milled in a workpiece of 300 mm length using a side and face milling cutter of diameter 100 mm, width 30 mm and having teeth 20. Taking depth of cut 5 mm, feed per tooth 0.1mm, cutting speed 35 m/min and over travel distance of 5 mm. Calculate time required for milling the slot.							03					

Sr. No.	Questions	Dec - 14	May - 15
Theory			
1.	What is Indexing? Enlist and Discuss various types of Indexing.	07	
2.	Enlist various Milling Operations. Discuss the following operations. 1. Straddle Milling 2. Gear Milling 3. Face Milling	07	
3.	What do you understand by (1) Gang milling (2) Straddle milling (3) String milling?		07
4.	Explain method of mounting and application of the following cutters used on milling machine: (1) End mills, (2) Slitting saws and (3) Slab milling cutter.		07
5.	Explain how you will check the following on milling machine: (1) Central T-slot square with arbor (2) Work table parallel with arbor rising towards over arm.		07
Example			
1	Calculate machining time for steel slab top surface 400mm wide and 500mm long to be planed on a planer. The cutting speed and return speed are 20 m/min and 80 m/min respectively. Take machining allowance as 10mm, side over travel of tool as 3mm, table over travel on both side as 100mm and tool approach angle as 45°. The cross feed of tool is 3mm/full stroke.		07

Chapter 6 – Shaper, Planner and Slotter machine

Sr. No.	Questions	Jun - 10	Dec - 10	Jun - 11	Nov - 11	May - 12	Oct - 12	Dec - 12	Jun - 13	Dec - 13	Jun - 14	Dec - 14	May - 15
Theory													
1	Explain working of hydraulic shaper with neat sketch.	07											
2	Differentiate between open side planner and Standard double housing planner.	07											
3	What is quick return motion mechanism? Explain hydraulic type quick return motion mechanism used in shaper machine with neat sketch along with its advantages and disadvantage.		07		07			07	07				
4	Explain principal parts of standard planner with neat sketch. Also describe Various differences between shaper & planner.		07			07						07	
5	Explain with neat sketch working of crank and slotted link quick return mechanism of shaper.			07	07	07		07			07		
6	State comparison of shaper and planer. What are advantages and disadvantages of shaping and planning as compared to other operations?			07									
7	How stroke length and stroke position can be set on a shaper having crank and slotted link mechanism?								07				
8.	Explain with neat sketch quick return mechanism of a Shaper machine.											07	07
9.	Discuss Slotted disc mechanism in Slotting Machine											07	

Sr. No.	Questions	Dec - 14	May - 15
Theory			
1.	Explain Hydraulic shaper mechanism in details and also discuss the quick return motion of Hydraulic shaper.	07	
2.	Give the differences among shaper, planner and slotter. Discuss Briefly the planner driving mechanism.	07	
3.	Explain with neat sketch shaper feed mechanism.		07
4.	Draw a neat sketch of slotter and explain function of principle parts of slotter.		07

Chapter 7 – Sawing and Broaching Machine

Sr. No.	Questions	Jun - 10	Dec - 10	Jun - 11	Nov - 11	May - 12	Oct - 12	Dec - 12	Jun - 13	Dec - 13	Jun - 14	Dec - 14	May - 15
Theory													
1	List down the advantages and limitations of broaching operation.	07										07	
2	Explain the nomenclature of pull type broach.	07											
3	Classify sawing machine. Explain vertical band saw machine with neat sketch. Describe various applications of sawing machine.		07										
4	Classify broaching machine. Explain push and pull type broaching with neat sketch. Describe various advantages and limitations of broaching machine.		07										
5	Sketch a typical broach tooth profile and name its elements. Explain working of pull type and push type broaching.			07									
6	List the principal types of metal cutting saws. Describe working of reciprocating and circular sawing machine.			07							07		
7	Write advantages, limitations and applications of "Broaching-Machines".				07			07			07		07
8	With the help of neat sketches explain the "Setting of band saw teeth". with the help of neat sketch explain the principle of operation of a horizontal band Saw machine.				07								
9	Discuss various broaching methods in details with its applications.					07							

10	Define Sawing. Write advantages, limitation & applications.							07					
11	Explain with neat sketch Horizontal pull type broaching machine								07			07	

Sr. No.	Questions	Dec - 14	May - 15
Theory			
1.	What are the advantages, limitations and applications of broaching ? Explain "Pull broaching" and "Push Broaching".	07	
2.	Write a short note on: "Band Sawing Machin	07	
3.	Explain basic principle of broaching. Make neat sketch of internal pull type broach showing various terms related to its teeth and explain significance of these terms.		07
4.	What is meant by setting the saw teeth? Describe various types of teeth sets and give their application.		07

Chapter 8 – Grinding Machines and Abrasives

Sr. No.	Questions	Jun - 10	Dec - 10	Jun - 11	Nov - 11	May - 12	Oct - 12	Dec - 12	Jun - 13	Dec - 13	Jun - 14	Dec - 14	May - 15
		Theory											
1	Explain the standard marking system for grinding wheels.	07		07	07						07		
2	Explain grinding process with neat sketch. What are the special features & issues to be addressed by manufacturing engineer?		07										
3	Explain centreless grinding process with neat sketch & standard work feeding methods for centreless grinding with neat sketch.		07									07	
4	Write a note about grinding wheel parameters influencing the process in brief. Also write standard marking system for grinding wheel with example & manufacturing of grinding wheel.		07										07
5	State classification of grinding machine. Explain working of reciprocating and rotary table surface grinding machines.			07									07
6	Explain working of universal and plain center type cylindrical grinding machines.			07									
7	Explain glazing, loading and mounting of grinding wheel.					07							
8	State the marking system for grinding wheels recommended by Bureau of Indian Standards (IS: 551-1989). Identify grinding wheel. 220 X 25 X 30 W A 40 L 4 V 18							07					
9	Explain the following terms. i) Glazing ii) Loading iii) Dressing iv) Truing.							04					

10	Name & draw neat sketch of various grinding wheel, also write its application.							03					
11	Classify surface grinders. Explain with neat sketch the relative work, grinding wheel and table movements on reciprocating table type surface grinder.								07				
12	Grinding wheel characteristics or performance of a grinding wheel depends on types of abrasive, grain size, structure and bonding material. Discuss the effect of each.								07				
13	List the various types of grinding machines and explain any one grinding machine.									07	07		
14	Discuss in detail the factors to be considered for selection of the grinding wheels.									07			
15	Explain following terminology of grinding wheel with suitable examples. i. Grit material ii. Grit Size iii. Bond grade iv. Structure of the wheel v. Bond material												07

Sr. No.	Questions	Dec - 14	May - 15
		Theory	
1.	What is an Abrasive? How are abrasive Classified? Enlist and explain various abrasives used in grinding wheels.	07	
2.	With neat sketch explain Center less Grinding Machine.	07	
3.	List the various types of bond used in manufacture of grinding wheels. State the type of application in which each bond is useful.		07