

Assignment for IMP lab

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19EC01015
Group-1
Section-IV

Lath machine

1. Describe the lathe machines according to the configuration?

A. Vertical lathe: A vertical lathe is essentially a horizontal lathe that has been designed to stand on its end. Some machinists opt for a vertical lathe if there are space constrictions in the shop, or perhaps as a matter of preference. It is done on up down fashion.

Horizontal lathe: The machinist works the metal in a side to side fashion

- 2 List some important parts of a lathe machine.

- A.
1. Headstock
 2. Tail stock
 3. Bed
 4. Carriage
 5. Lead screw
 6. Feed rod
 7. Hand wheel.
 8. Tool post
 9. Spindle with chuck.

Q. What are the different sizes and capacity of lathe machines?

A. Small (low duty) - In such light duty lathes (up to 1.1 kW), only small and medium-size jobs of generally soft and easily machinable materials are machined.

Medium (medium duty) - Lathes of power nearly up to 11 kW are most versatile and commonly used.

Large (heavy-duty)

Mini or micro lathe - These are tiny table-top lathes used for extremely small size jobs and precision work; e.g.: Swiss-type automatic lathe.

Milling machine

1. what is the difference between peripheral milling and face milling

A.	Peripheral milling	face milling
(1)	The axis of tool is parallel to the surface being machined.	The axis of cutter is \perp lar to surface being milled.
(2)	Operation is performed by cutting edges on the outside periphery of the cutter.	Machining is performed by cutting edges on both the end and outside periphery of the cutter.

2. Describe the difference between up milling and down milling

	Up milling	Down milling
(1)	Also known as conventional	Also known as climb milling.
(2)	Milling is against the feed	Milling is with the feed
(3)	Chip thickness increases	Chip thickness decreases.

3. what is pocket milling?
- (a) Another form of end milling used to mill shallow pockets into flat parts.

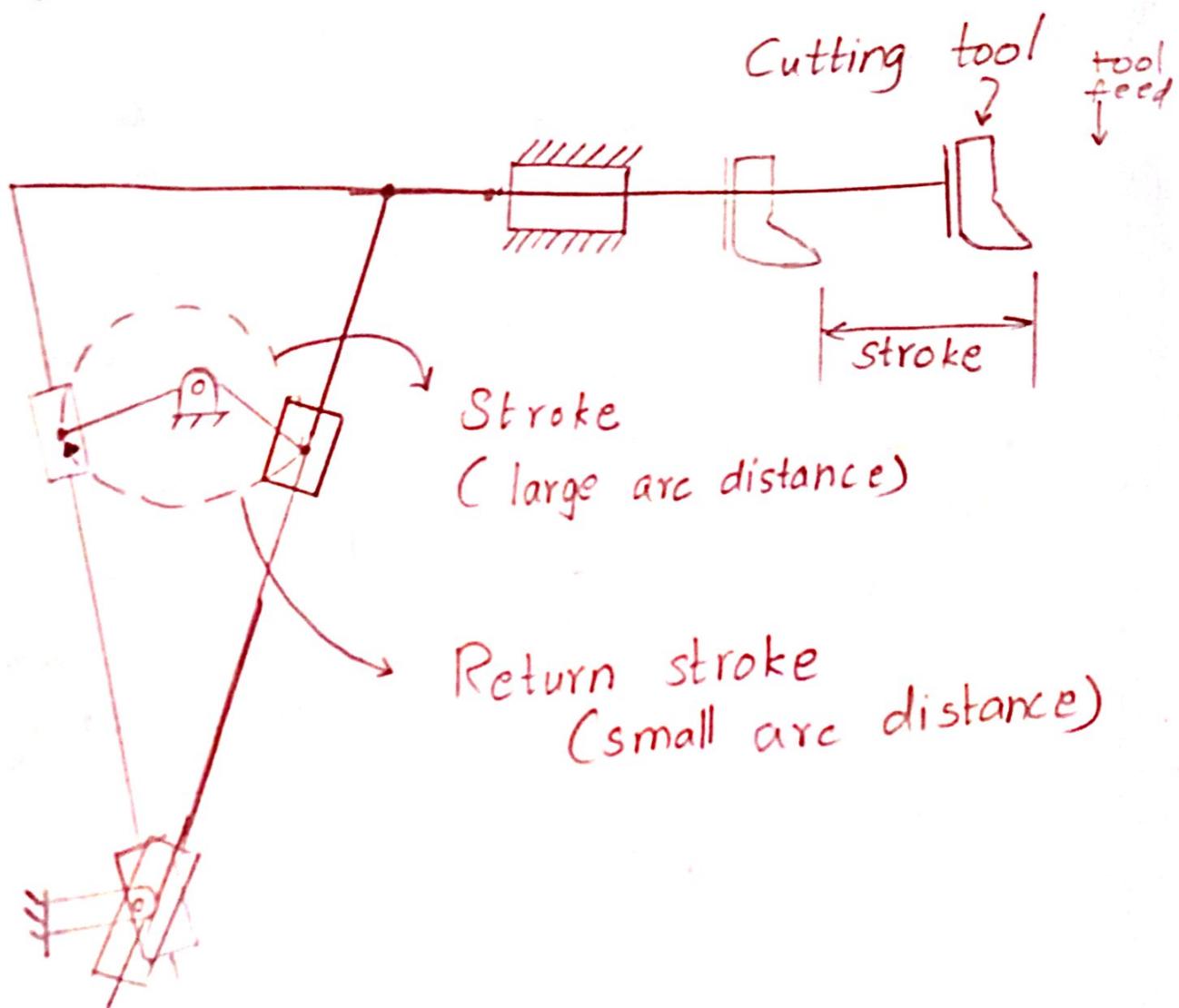
shaper

1. What is shaper machine?
- A. The shaper is a reciprocating type of machine tool intended primarily to produce flat surfaces. These surfaces may be horizontal, vertical or inclined. In general, the shaper can produce any surface composed of straight line elements. Modern shaper can generate contoured surface.

2. Explain the quick return mechanism used in shaper machine.

A. A quick return mechanism is an apparatus to produce a reciprocating motion in which the time taken for travel in return stroke is less than in the forward stroke. It is driven by a circular motion source and uses a system of links with three turning pairs and a sliding pair.

Quick return mechanism.



Quick return is a common feature of tools in which the action is performed in only one direction of the stroke, such as shapers.

Q. What are the different applications of shaper and planer?

A. They are used for cutting slots, grooves and keyways, machining splines / cutting gears, machining angular surfaces.

Foundry

Q. What are the various constituents of moulding sand?

A. For moulding sand, we use green sand.

It contains high quality silica sand, about 10% bentonite clay 2-5%, water, 5% of sea coal.

Q. What are some of the important properties of moulding sand?

A. Some important properties of moulding sand are porosity, flowability, collapsibility, adhesiveness, cohesiveness or strength, siffractiveness.

3. What is function of cores used in sand casting?

A. Cores are generally required to form the hollow interior of the casting or a hole through casting sand and core inside pattern give rigidity and support to structure.

3-D printing

1. What is additive manufacturing and how is it different from other conventional manufacturing processes?

A. Additive manufacturing operates by adding layers of material together to make an object. Traditional manufacturing methods, by contrast, are subtractive in nature. Subtractive manufacturing involves removing parts of a block of material in order to create desired shape.

2. Which category of additive manufacturing does 3-D printing belongs to? Discuss the principle briefly.

A. 3D printing belongs to material extrusion process of additive manufacturing.

The core principle of this tech is that any material that is a semi-liquid or paste form can be pushed through a nozzle and used to draw the 2D cross sections of a solid 3D model.

3. what is the role of layer resolution in determining the strength and smoothness of 3D printed part?

A. The thickness of each layer determines the resolution of a print in a similar way that number of pixels in TV. Lower layer height results in smooth surface. However the printing process will take longer for finer layers as printer has to produce more layers and it's also strong.

Fitting

1. What is use of dot punch and scriber in fitting works?

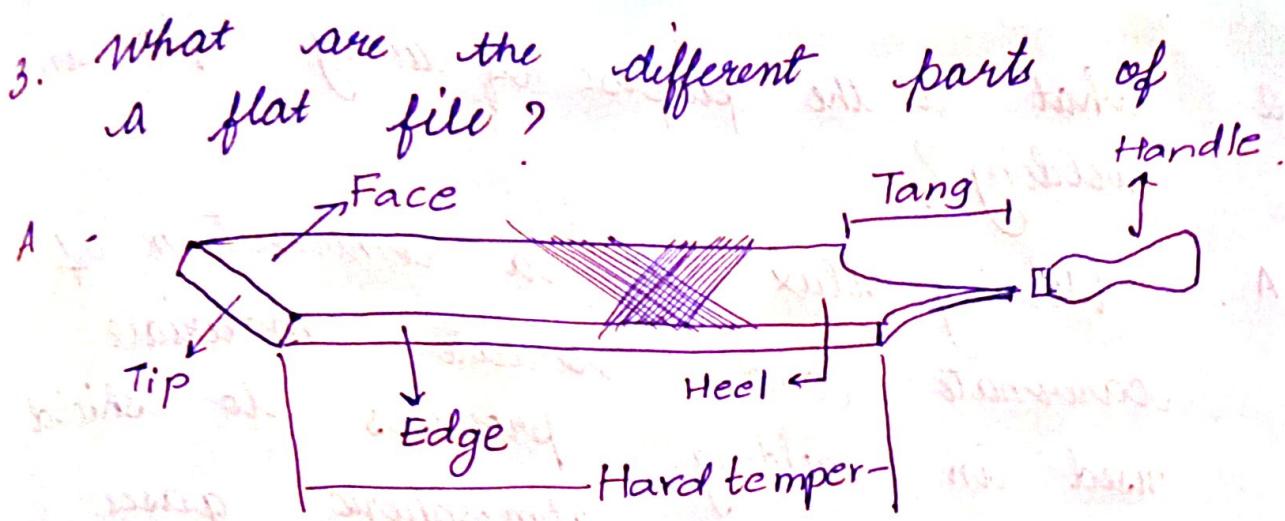
A. A scriber is a slender steel tool used to scribe or mark lines on metal work pieces.

Dot punch is used to lightly indent along the layout lines, to locate center of holes and to provide a small center mark for divider point etc.

2. What are the purposes of using angle plate and surface plate in work?

A. An angle plate is a work holding device used as a fixture in metalworking. It's made of cast iron to prevent further movement or distortion.

3. A surface plate is a solid, flat plate used as the main horizontal reference plane for precision inspection, marking out and tooling setup.



Face

Tip

Edge

Heel

Tang

Handle.

Welding

1. What is the basic principle of arc welding?

In arc welding, positive voltage is applied to the electrode (welding rod/wire) and negative voltage is applied to the base material. In a welding process the heat can be generated with an electric arc strike among the workpiece as well as an electrode.

2. what is the purpose of using flux in welding?

A. Welding flux is a combination of carbonate and silicate materials used in welding processes to shield the weld from atmospheric gases. When the heat of weld zone reaches the flux, the flux melts and outgasses. The gases produced push the atmospheric gas back, preventing oxidation.

39. What are the types of welding joints commonly used?

A. The different types of welding joints are butt joint, corner joint, edge joint, lap joint, t-shaped joint.