

time, but decreases wood strength.

### iii) Artificial seasoning:-

It takes lowest time among other seasoning process but also affect the quality of wood.

In this process timbers are stacked on trolleys and driven in hot oven called kilns. In these hot chamber under controlled temp. and humidity woods are kept for only one night. After that we get seasoned wood.

## 2. What are common defects in wood?

→ There are many defects in wood but defects in wood are divided into 3 types:-

- i) Natural defects
- ii) Defects due to conversion, seasoning etc
- iii) Defects due to fungi and insects.

# Carpentry

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2. What are the advantages of timber?

→ The advantages of timber are:-

- i) It is easy to reshape and resized.
- ii) Structural connections and joints can be easily made in timber.
- iii) It is lighter and stronger than most of other material available for construction work.
- iv) It is easy to polish and paint the timber.
- v) It is very suitable for making furniture designs and making sound proof construction.

3. With neat sketch, explain the structure of wood.

→ In wood or timber 6 parts:-

- Pitch
- Heartwood
- Sapwood
- Cambium layer
- Inner bark layer
- Outer bark layer



In one plane.  
ex- Jack plane, Troughing plane etc

iv) boring tools:-

Used to drill in wood.  
ex- Bradawl, brace etc

v) Striking tools:-

Used to strike on wood like  
to push a pin in wood.  
ex- hammers

vi) Holding & miscellaneous tools

Used to hold the wood log or  
piece to work on it.  
ex- Vices.

12. Give a list of marking & measuring tools.

→ Following is the list of all marking & measuring tools:-

i) Try square      ii) straight edge

• It has TPI Value of 3-5.

• It has TPI Value of 6-8.

• Its teeth are designed to cut along or with the grain.

• Its teeth are designed for cutting across the grain.

18. Describe the Construction and use of

- i) Tenon saw ii) Bow saw iii) Dovetail saw  
iv) Compass saw v) Pad saw

→

i) Tenon saw:-

Construction:-

Tenon saw blades are from 250-400 mm in length and usually have 12 teeth per 25 mm. The teeth are shaped like an equilateral triangle.



9. How do you classify wood?

→ We can classify wood or timber on the basis of their commercial uses.

On this basis, wood is divided into two types.

i) Soft wood

ii) Hard wood.

~~to Name~~

Soft wood

Hard wood

- It can be found in trees with long narrow leaves.

- It can be found in trees with broader leaves.

- It is less durable.

- It is more durable.

- It is light in weight and colour.

- It is heavier in weight and dark in colour.

- It contains more moisture.

- It contains less moisture.

page 20  
metal Jack

at places are-

in this by 9

surface of  
of 45

ack plane,  
or packed.

its cutting  
ing and  
shaving

page 21

23 What is Ratchet Brace? What is the advantage of Ratchet brace in it?

→ Ratchet brace is a lever that has a ratchet driven chuck at one end and is used for drilling holes in metal.

The advantage of using Ratchet brace is that the linear motion of its crank-shaped handle can provide ample torque when drilling.

25 What are the different joints used in the wood working?

→ The different joints used in wood working are-

- |                   |                  |
|-------------------|------------------|
| i) Butt joint     | ii) Bisuit joint |
| iii) Ribs joint   | iv) edge joint   |
| v) Dovetail joint | vi) Dado joint   |



contents as their food and destroy the same.

These caused defects can be of two types:-

- dry rot - caused by the attack of fungi on dry wood.
- wet rot - caused by the attack of fungi on living tree.

b) Insects:-

There are mainly two insects which causes defects

- Beetle - uses wood as their food.
- Termite - produce holes in wood to find shelter.

11. How are the wood working tools classified according to their uses?

→ There are many of wood working or carpentry tools out there but before we start to work with them, we have to classify them in according to their uses.

According to their uses carpentry or wood working tools are divided in 6 types-

i) Marking & measuring tools:-

Used for marking or measuring.  
ex- Try Square, Mitre Square etc.

ii) Cutting tools:-

Used for cutting of wood or timber.  
ex- Saws, chisels etc.

iii) planing tools:-

Used to make surface of wood



## 6. Define Seasoning of wood.

→ Seasoning of wood is a process which is used to extract or reduce the moisture in the wood. It is important to do as if moisture is not taken out of wood it can cause many defects like uneven shrinkage, warping etc. in wood.

Seasoning also makes wood hard, more durable and resistance to shock and stress.

## 7. Explain different methods of seasoning.

→ There are many methods of seasoning but important one b/w them are

### i) Natural or air seasoning:-

It is most efficient & cheapest method of seasoning, also it doesn't affect quality of wood but takes lots of time.

In this method timbers are stacked

## V) Red Saw:-

### Construction:-

The blade is about 250mm long which is secured to the handle through which it passes by two screens. This allows the blade to be adjusted to the best length required.

### Uses:-

It is used to cut key holes on the starting of any interior cuts.

19. Name the different planes used in wood working?

→ Following is the list of planes used in wood working:-

- i) Jack plane    ii) Plane plough
- iii) Trimming plane    iv) Spokeshave
- v) Smoothing plane    vi) Metal plane
- vii) Rebate plane    viii) Special plane



which cause uneven shrinkages, and leads to shakes.

### b) Distortion:-

It is also caused due to uneven or not uniform seasoning. As a result of distortion some common defects are like twisting, cupping, bowing, splitting end, warping etc.

### ii) Defects due to the actions of fungi and insects:-

#### a) Fungi:-

They use the wood and cell

beakwood. It has high percentage of moisture, and also responsible for transmission of water and mineral through it.

iv) Comblum layer:- It is found just under bark layer. It is the latest addition of annual ring, which is process of formation. As time passes it converted into sapwood.

v) Inner bark layer (IBL):-

It protect comblum layer for some extent and provides food from leaves to comblum layer.

vi) Outer bark layer (OBL):-

It is like security shield of Comblum layer from the attack of insects or other outer external things.



on multilevel platforms, one after another. There are space gap b/w timber so for circulation of air. These timber should not directly exposed to sunlight or rain. So they are packed in big room type shed. These timbers are not allowed to have any contact with moisture, for this sand or ash is used under platform. Due to air circulation through stack wood gets dried and we get seasoned wood.

### ii) Water seasoning:-

Water seasoning is something similar to air seasoning, but before putting those timber in stack for air seasoning, in water seasoning they kept in water flowing for 2-3 weeks so that water drives away sap of wood. Then timber taken out and can be seasoned by air seasoning. It takes less

oil, shrinking takes place which cause crack or rupture in wood. is called shakes.

II) Defects due to conversion, seasoning etc. :-

These defects are caused while conversion or seasoning of timber.

Some common defects of these types are:-

1) Shakes :-

If there is any separation b/w two adjoin layers of wood, during seasoning then outer part dries quicker than inner





i) Pitch - It is the dark central part of the tree. It is one of the earliest formation of tree and feeds with time. The annual rings are added around this every year.

ii) Heart wood - Portion of wood around the pitch. It is darker in colour. Also it is harder and stronger than other part of tree wood. So, from construction basis, it is most important part of wood.

iii) Sapwood :- It is portion of wood between heartwood and cork layer. It is lighter in colour, softer and weaker than

Q-14

square  
adding the  
taking side

gauge

Square refers to  
the testing of a  
surface for straight-  
ness and it's  
relation to adjoining  
surfaces.

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type of joint which  
sets two bevelled  
pieces coming toge-  
ther to form  
corner.

15 list different types of saws used  
in carpentry.

-> The different types of saws are -

- |                    |                   |
|--------------------|-------------------|
| i) Rip saw         | ii) Bow saw       |
| iii) Cross cut saw | iv) Coping saw    |
| v) Panel saw       | vi) Compass saw   |
| vii) Tenon saw     | viii) Keyhole saw |
| ix) Dovetail saw   |                   |

16 Differentiate between Rip saw and Cross-  
Cut saw.

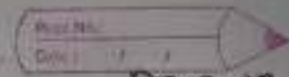
→ Rip Saw

Cross-cut saw

• Rip-teeth are not  
angled.

• Cross-cut teeth are  
angled.





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the length may vary from 200-350 mm.

Use:-

It is used in requirements of max. accuracy and fine shallow cuts.

iv) Compass Saw:-

Construction:-

These saws have a narrow, tapered blade usually ending in a sharp-point, typically with a tooth pitch of 2.5-3 mm with length of blade about 250-400 mm long.

Uses:-

It is used for sawing small curves in confined shapes.

~~Pad So~~

So, common defects in each types are

### i) Natural defects:-

It is due to abnormal growth of tree.  
Some of common natural defects are -

#### a) Knots:-

The impression left behind by the broken limbs or branches later appear as knots. It decreases strength of wood and makes it hard to work on them.

#### b) Shakes:-

They are formed when tree is not cut after attaining full maturity, then due to evaporation of gums, moisture and resins,



20 Explain different parts of metal Jack plane.

→ The different part of Jack planes are-

i) Woods block:-

The blade is fitted in this by a wedge.

ii) blade:-

Used to scratch the surface of wood. Set at angle of  $45^\circ$  with base sole.

iii) Sole:-

It is main body of Jack plane in which other parts are packed.

iv) back iron:-

Stiffens the blade near its cutting edge to prevent chattering and partially breaks the shaving as it's made.

- iii) Bevel square
- iv) Mitre square
- v) divider
- vi) Carpenter's folding rule
- vii) Marise gauge
- viii) scriber or marking knife
- ix) Long compass
- x) Gauges
- xi) T-square
- xii) Callipers
- xiii) Nesting gauge
- xiv) Cutting gauge

13. Differentiate bet try square and mitre square.

→

Try Square	Mitre Square
<ul style="list-style-type: none"> <li>• It is used for measuring and setting out dimensions of right angle.</li> <li>• It is consist of steel blade fitted into a wooden or metallic stock at right angle to it.</li> <li>• The 'try' in try</li> </ul>	<ul style="list-style-type: none"> <li>• It is used to measure an angle of 45°.</li> <li>• It is made of all metal with a nickel-plated finish or with a steel blade and an ebony or rose wood stock.</li> <li>• A mitre is a</li> </ul>

15

16



### Uses:-

It is used for making straight and precise cuts.

### ii) Bow Saw:-

#### Construction:-

The bow saw has a narrow blade, 250-350mm long, held in wooden frame. The blade is held in by twisting the string with a small wooden lever.

#### Uses:-

It is used for cutting quick curves with the facility to hold handle and turn the blades.

### iii) Dovetail saw:-

#### Construction:-

The number of teeth may vary from 10-12 teeth per 25mm width.