



- NON-METALLIC

- NATURAL

 - WOOD

 - SAND

 - STONE

- SYNTHETIC

 - PLASTIC

 - GLASS

- a. Natural Materials

- Stone and sand are essential for the building industry

- Wood is used in modern engineering manufacture; it is light, strong and easily worked, and it is available in a wide range of attractive colours. Engineers make much use of suitable woods in the manufacture of wooden patterns from which metal castings

b. Synthetic materials

Synthetic are man made materials. All have great advantages over natural materials, since they may be manufactured to suit particular requirements.

- ⦿ A wide range of components, radio parts, toys and fabrics are manufactured from plastic.
- ⦿ N/B: The choice of a material to make a component depends on three factors.
 - (i) Its ability to stand up to the conditions likely to be encountered when the component is put to use.
 - (ii) Its suitability for the manufacturing process adopted.
 - (iii) Its cost.

- Carpentry: woodworker's job
- The woodworker's tool kit is his prime means of obtaining job satisfaction in his chosen , career .
- Carpentry tools can be divided into five (5) broad categories :
- (i)Tools for marking , measuring and testing
- (ii) Cutting tools
 - Boring tools
 - Percussion tools –(hammers)
 - Screwdrivers and pincers .
- (i) Tools for marking, measuring and testing
- (a) Rules –These are available in various forms such as bar rules, folding rules and flexible tapes .

● MATERIALS

- The basic raw materials of the carpenter and joiner, is Timber which is the product of the woody perennial plant which is know as a tree.
- Trees are divided into two main groups, hardwoods and softwoods. Hardwoods are the broadleaved trees such as oak, ash, teak and mahogany. While the softwoods include the conifers whose laves are generally in the form of needles or scales as borne by the pines, firs and spruces.

- Timber in its natural form is one of the most useful and versatile of the materials used by man. It however has certain inherent shortcomings which tend to limit its usefulness in its solid form. These include
- Width of boards – tapering – diameter not constant
- Stability – especially in large sizes, timber is likely to warp, shrink or swell.
- Strength – strong longitudinally, relatively poor across the grain. Large knot can seriously weaken it even in the direction of its maximum strength.

- Man-made boards – These boards are an attempt to overcome the shortcomings of solid timber. Examples are:
 - Plywood – available in large, standard size sheets in a range of the t
 - Thickness from 1mm upwards.
 - Peeled and sliced veneers
 - Blockboard
 - Laminboard
 - Battenboard
 - Particle boards
 - Fibre boards
- Processing / Seasoning of Timber:
 - Removal of water in the form of sap is known as “seasoning”.
 - Two main methods
 - ‘air frying – natural seasoning
 - Kiln drying – mechanical means.
 - Advantages of kiln seasoning
 - the speed at which the seasoning is carried out
 - the facility to dry timber