

30.15 WOODWORK (444)



MANYAM FRANCHISE
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30.15.1 Woodwork Paper 1 (444/1)

1. (a) Two tasks performed with the following tools:

- (i)
- Backsaw
 - Cutting small pieces of wood .
 - Cutting joints.

($\frac{1}{2} \times 2 = 1$ mark)

- (ii)
- Handsaw
 - Cutting large pieces.
 - Cutting a long grain.
 - Cutting across grain.

($\frac{1}{2} \times 2 = 1$ mark)

(b) 4 tools used for wood carving:

- -chisels
- -mallet
- -gouges
- -spokeshaves
- -rasp file

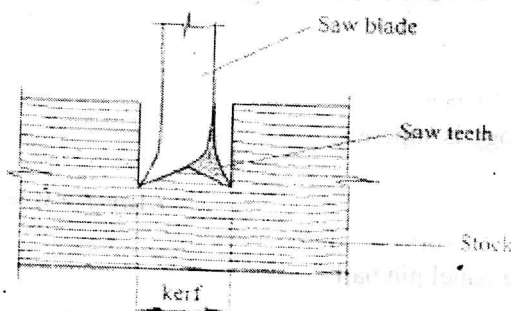
(any 4 x $\frac{1}{2} = 2$ marks)

2. (a) How trees manufacture their food.

The leaves play the vital role of producing the tree food. By absorbing daylight, energy through the green pigment (chlorophyll) in the leaf, they convert a mixture of carbon dioxide taken from the air and sap from the roots into sugar and starches, while at the same time releasing oxygen into the atmosphere as a waste product. This process is known as photosynthesis. During the night the action is reversed – the leaves take in oxygen and give off carbon dioxide – respiration.

(3 marks)

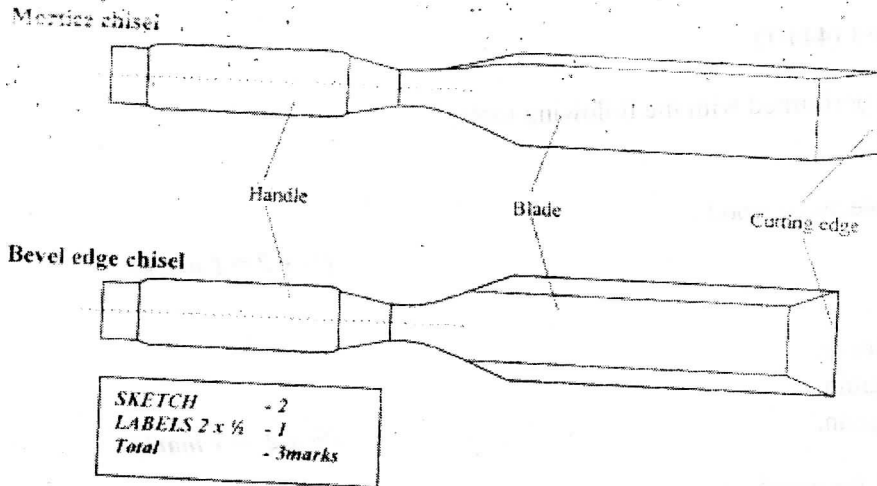
(b)



Kerf is the slot formed by the cutting action of the saw teeth.

Explanation 1 mark
Sketch 1 marks
Labels any 2 x $\frac{1}{2} = 1$ mark
(3 marks)

3. (a)



(b) Any **four** measuring tools

- - Bar rule
- - Folding rule
- Calibrated try square
- - Calipers
- Tape measures
- - Steel rule
- Sliding bevel
- Ruler

(Any 4 x ½ = 2 marks)

4. (a) Difference between marking gauge and cutting gauge:

- cutting gauge has a blade and is used to cut deep lines across the grain.
- marking gauge has a sharp point used to mark along the grain.

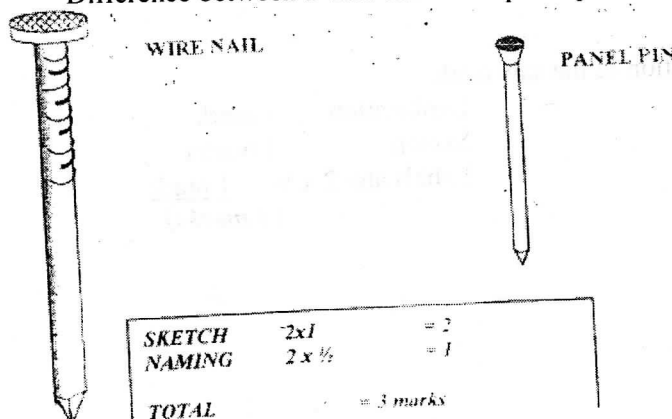
(2 x 1 = 2 marks)

(b) **Four** threats a jua-kali woodworker faces due to technological advancement:

- Hand tools are too slow to use.
- lack of skills in new technology
- new technology is expensive
- Final quality of work using new technology is superior.
- -stiff competition.
- -Capital

(Any 4 x ½ = 2 marks)

5. Difference between a wire nail and a panel pin nail.



6. Joints and their classification.



Scarf Joint
(Lengthening)



Tongue and Grooved
(Widening)

Sketches $2 \times 1 \frac{1}{2} =$

3 marks

Classification $2 \times \frac{1}{2} =$

1 mark

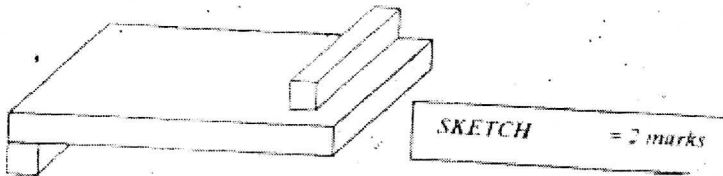
4 marks

7. (a) Four types of surface finishes used to protect a wood surface against water

- penetration.
- -paint
- -varnish
- -wax
- -polish

(4 x ½ = 2 marks)

(b) Pictorial view of a bench hook.

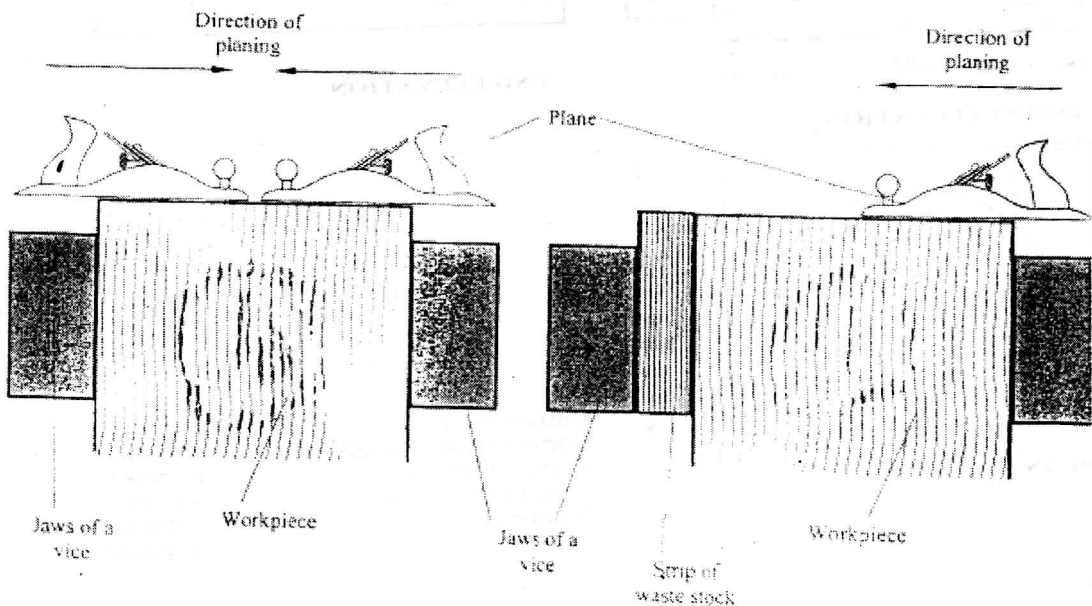


8. Four types of wood fillers.

- -plaster of paris
- -paste filler
- -staining filler
- -proprietary wood filler
- -saw dust filler

(Any 4 x ½ = 2 marks)

9.

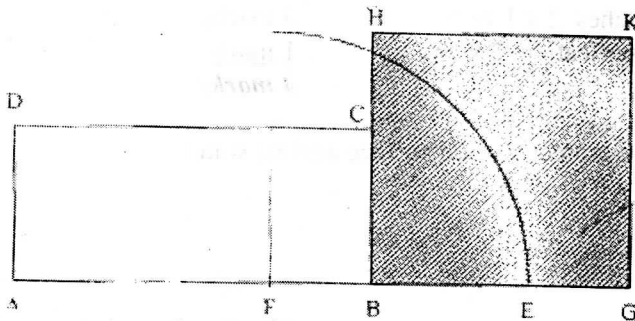


Planning halfway across the Stock and turning the plane from the opposite side.

Planning the end grain with a waste stock placed at the edge to prevent edge splitting.

Sketch $2 \times 1\frac{1}{2} = 3$ marks
 Explanation $2 \times \frac{1}{2} = 1$ mark
(4 marks)

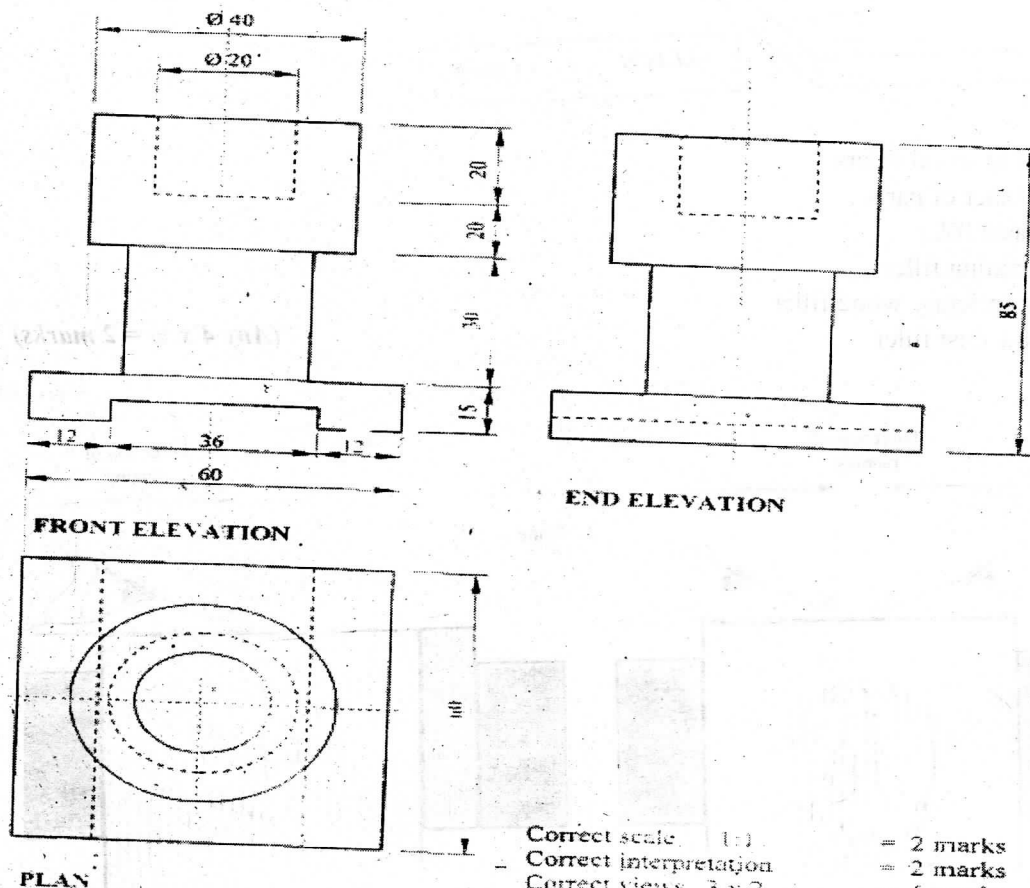
10.



Copying the rectangle = $\frac{1}{2}$ mark
 Radius BC to BE = 1 mark
 Bisecting AE in F = 1 mark
 Radius FE to BC produced = 1 mark
 BG = BH = $\frac{1}{2}$ mark
=(4 marks)

Section B

11.



Correct scale 1:1 = 2 marks
 Correct interpretation = 2 marks
 Correct views 3 x 2 = 6 marks
 Major dimensions any 6 x $\frac{1}{2}$ = 3 marks
 Neatness = 2 marks
15 marks

- 12 (a) Factors to consider for good housekeeping:
- Keep the top of workbenches clean.
 - Keep the floor surface clean and free of oil spills.
 - Wipe oil and grease spots.
 - Place scrap stocks in scrap boxes.
 - Keep tools away after use.
 - Provide enough lighting and ventilation.
- (Any 5 x 1 = 5 marks)

- (b) Procedure of planning face edge:
- Clamp the work in the vice with the edge about 50mm or 75 mm above the jaw.
 - Hold the plane at right angles to the face surface and make a long, even stroke. **Keep the plane square with the surface.**
 - Continue planning until a uniform shaving comes off the edge.
 - Remove the board from the vice. Hold the handle of a try-square against the face surface to check for squareness, along the entire edge.
 - Check for straightness using a straight edge along the edge from one end to the other.
 - Mark the face edge.
- Procedure = (6 marks)

- (c) Procedure of forming curved shape in wood.
- Mark out the shape accurately using a template.
 - Cut the waste piece as close to the marked outline as possible and remove the waste piece.
 - Use a spokeshave or a block plane to plane down to the outline.
 - Sand the surface with a smooth sand paper.
- (4 marks)

13. (a) Procedure of making a keyhole:
- Mark the hole and the slot
 - Drill a hole approximately equal to the diameter of the keyhole.
 - Form the slot for the keyhole using a pad/key hole saw.
 - Finish the hole with a round file.

(4 x 1 = 4 marks)

- (b) To prevent damage to chisels:
- **Never use a steel hammer as a mallet to drive chisels – It will ruin the handle and could damage the blade.**
 - **Never use a chisel as a screw driver, scraper etc. – It will destroy the cutting edge.**
 - Do not use chisel on stock with nails grit or other foreign matter on its surface. The material will dull the blade.
 - When storing chisel ensure cutting edges are protected. Never store them touching other hard objects. Coat the blade of chisel with oil and wax before storing – coat will prevent rust.
 - Be sure that all the handles fit tightly to their blade. It prevents vibration of chisel while using.

Explanation any 4 x 1 = 4 marks

Reason any 4 x 1 = 4 marks

(8 marks)

13. (c) Driving in Nails:
- Choose the right kind of nail for the job. Hold the nail firmly with one hand, hold the hammer handle near the end and strike a 1st light blow.
 - Take hand off the nail. Keep striking the nail right on the head until its drawn flush with the surface. Do not dent wood. Use nail punch to drive nail below surface where necessary.
- (3 marks)

14. (a) **Upset – Natural – splits across the grains usually occurs when falling.**

Ring shake Natural – caused by strong violent wind during early stage of

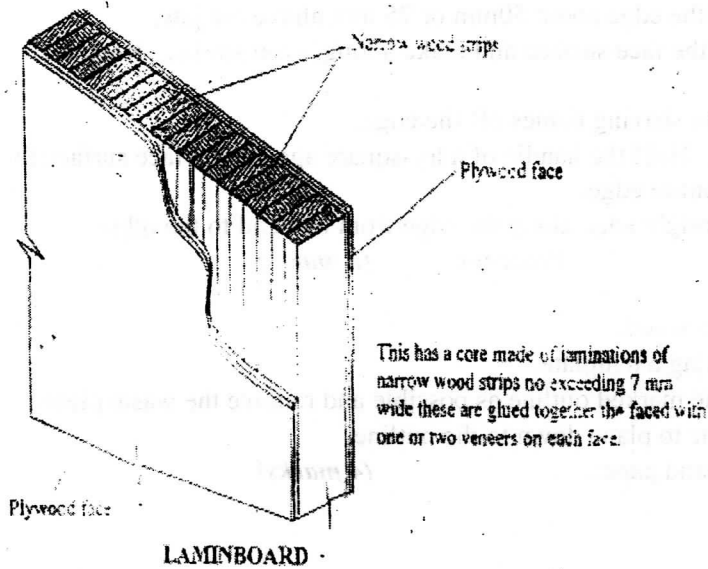
Growth – separation of the cambium layer.

Spring – Seasoning - curvature a long a board's edge differential shrinking
Longitudinally along irregular grain.

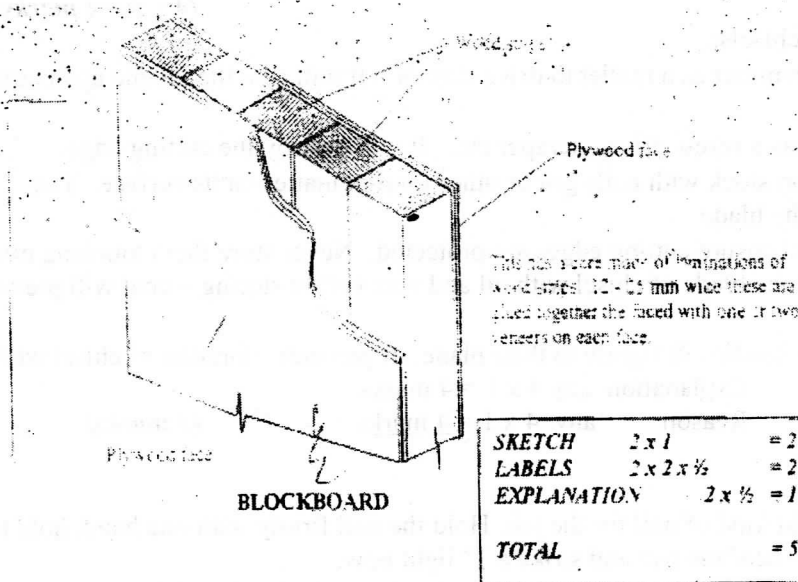
Checks – Seasoning - parting of grains producing cracks surface drying much
Quicker than the core. (4 x 1½ = 6 marks)

(b) Difference between Lamin Board and Blockboard.

This has a core made – up of lamination of narrow wood strip not exceeding 7mm wide – glued together then faced with one or two veneers on each surface.



(b)



Similar to laminboard except that the wood strips used as core are wide – usually 12-25 mm.

Sketch 2 x 1 = 2 marks
Labels 2 x 2 x ½ = 2 marks
Explanation 2 x ½ = 1 mark
= 5 marks

(c) Volume = $l \times b \times h$
 $= 150 \times 150 \times 1800$
 $= \text{convert into metres}$
 $= \frac{150}{1000} \times \frac{150}{1000} \times \frac{1800}{1000}$
 $= 0.0405 \text{ m}^3$ (1 mark)

Density = 721 Kg/m^3
 Mass = Volume x Density
 $= 0.0405 \times 721 = 29.2 \text{ Kg.}$ (1 mark)

M.C = $\frac{\text{Initial weight} - \text{final weight}}{\text{Final weight}} \times 100 \%$ (1 mark)

$= \frac{29.2 - 20}{20} \times 100 \%$ (½ mark)

$= 46.0\%$ (½ mark)
(4 marks)

15. (a) Reasons for staining timber:

- To make colour of all parts of an item uniform.
- To change the colour of the timber to a desired colour.
- To harmonise a job with the colour of other items.
- Improve the appearance of cheap, colourless timber.

(Any 3 x 1 = 3 marks)

(b) Measuring stock

Length

- Place the left end of the rule directly over one end of the stock with the rule on edge.
- Read at the other end the measurement on the rule. (2 x 1 = 2 marks)

Width

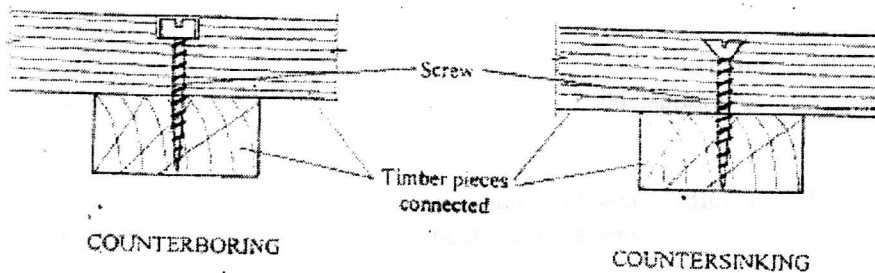
- Measure the width by holding the left end of the rule on one edge of the stock.
- Slide right thumb along the rule until you can read the correct width.

(2 x 1 = 2 marks)

Thickness

- Support the rule with one hand over the edge with the tip on furthest corner.
- Read the graduation just above the near corner. (2 x 1 = 2 marks)

(c)



- For counterboring, a hole the width of the head is bored in the top piece to a depth equal to the depth of the screw head.
- For countersinking, a seat for the base of screw head is formed.

Sketch 2 x 1 = 2 marks

Labels any 2 x 2 x ½ = 2 marks

Explanation 2 x 1 = 2 marks

(6 marks)