

NAME \_\_\_\_\_ Index no. \_\_\_\_\_

Candidate's signature \_\_\_\_\_

Date \_\_\_\_\_

**444/1**  
**WOOD WORK**  
**PAPER 1**  
**THEORY**  
**JULY/AUGUST**  
**2 HOURS**

**KATHONZWENI DISTRICT FORM 4 EVALUATION TEST 2013**  
**Kenya Certificate of Secondary Education**  
**WOOD WORK**  
**PAPER 1**  
**2 HOURS**

**INSTRUCTIONS TO CANDIDATES**

- Candidates should have the following for this examinations
  - Answer sheet
  - Drawing instrument
  - Drawing paper size A3This paper has two sections A and B  
Answer all questions in section A from section B answer question 11 and any other three questions
- All dimensions are in mm unless otherwise stated.

*This paper consists of 12 printed pages*

**Turn Over**  
(2mks)

1. (a) State instances when you would wear eye protection devices.

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- (b) List down five safety precautions connected to portable power tools and five connected to machines

(2 ½ mks)

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2. (a) Briefly explain the difference between face plate turning and turning between centres (1mk)

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- (b) Name and sketch four turning tools

(2mks)

(c) State four operations that can be performed on the jointer (2mks)

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3. (a) What is a laminated wood (1mk)

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(b) Sketch two shapes that can be performed by bending laminated wood (2mks)

(c) Explain briefly what would happen in each of the following when using a surface planer

(i) When the out feed table is set slightly higher than the knives

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(ii) The out feed table is lower than knives (4mks)

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4. (a) List down four tools that are used when reconditioning of hand saws (2mks)

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(b) What will happen in each of the following when setting hand saws

(i) Under setting of saw teeth

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(ii) Over setting of saw teeth

(2mks)

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5. Explain how one would test the following characteristics of a hand saw

(i) Straighten

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(ii) Temper of the blade

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(iii) Blade quality

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(iv) The security of a saw blade

(4mks)

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6. (a) Draw the cross – section of a tree trunk and label all the parts

(4mks)

(b) State the function of the following parts of the above tree trunk

(i) Cambium layer

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(ii) Medullary rays

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(iii) Sapwood

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(iv) Heartwood

(2mks)

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7. (a) State four factors affecting the rate of natural seasoning of timber

(2mks)

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8. If a 300g sample has a mass of 290g after drying calculate its moisture content

(1 ½ mks)

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9. State four roles of a forester in forestry department (2mks)

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10. By use of free hand sketch make an isometric diagram using the following views with point X the lowest X (4mks)

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**SECTION B (60 MARKS)**

*Answer question 11 and any other three questions from this section. Candidates are advised to spend not more than 25 minutes on question 11*

11. The figure below is of a machined block drawn in isometric. Draw full size in 1<sup>st</sup> angle projection, the three orthographic views of the block.  
64 35 20 40 50 25 20 100 20 24 10 20 FE E.E

12. (a) The following diagram is of a wooden block cut and shaped as follows

Briefly explain how the above recess is made stating the tools used (7mks)

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(b) With aid of sketches, describe from different ways of making carcass joints (8mks)

13. The figure below shows a drawer made from cypress wood and a plywood bottom  
140 450 300 A



(a) Using the given prices estimate the total cost – of the materials (5mks)  
Cypress 150 x 25mm = 100ksh per metre  
Plywood 1200 x 2400mm = 800 ksh per sheet

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(b) Name and sketch the joint “A” 8 (2mks)

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(c) Explain by sketched two methods of cutting veneers (8mks)

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14. (a) With aid of sketches, illustrate four conditions which require the grinding of jack plane cutting iron (4mks)

(b) Knots reduce the commercial value of timber explain one area where timber with knots can be used, where structural consideration is negligible (2mks)

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(c) Briefly explain how to test a carstone for square using ungraduated stick (5mks)

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(d) In point form briefly state points to consider when nailing (4mks)

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15. (a) Explain what you understand by the following terms (3mks)  
(i) Artisan

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(ii) An apprentice

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(iii) Craftsman

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(b) A sliding square in a precision tool with aid of sketches illustrate four of its uses (8mks)

(c) Briefly explain how a bodily damaged saw in reconditioned (4mks)

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WOOD WORK  
PAPER 1  
MARKING SCHEME**

1. (a) When to wear eye protection devices
- Turning using a lathe machine
  - Ripping with circular saw
  - Grinding using a grinder
  - Using sucking machines

$$\frac{1}{2} \times 4 = 2\text{mks}$$

(b) Safety precautions when using portable power tools

(i) – Work should be securely fixed on the bench

- There should be enough working space
- The guards should be put in place and well adjusted
- When the machine not in use it should be disconnected
- Machine should be switched off when not in use.

$$5 \times \frac{1}{2} = 2 \frac{1}{2} \text{ mks}$$

(ii) When in use

- No adjustment should be done when the machine is on.
- When the machine is turned off wait until it stops running
- Only one person should operate a machine at a time
- In case of power failure turn off the machine or unplug
- Do not feed the machine or tool faster than it can cut
- Run the machine or tool at full speed before starting to feed

$$10 \times \frac{1}{4} = 2 \frac{1}{2} \text{ mks}$$

2. (a) Face plate – this where the block the wood to be turned is secured  
Turning between centres – this where the wood to be turned is secured firmly by the head stock and tail stock

$$2 \times \frac{1}{2} = 1\text{mk}$$

(b) Turning tools

- The gouges

Used to remove bulk of the wood in order to bring (wood) work to required shape

***This paper consists of 8 printed pages***

***Turn Over***

Skew chisel

Parting tool

Scraping tool

1 x 4 (2mks)

(c) Jointer operations

- Planning face side
- Planning edge side
- Cutting of rebates
- Planning of chambers

$\frac{1}{2} \times 4 = 2\text{mks}$

3. (a) laminated wood in the art of bonding several layers of wood together over a form or mould to take the desired thickness

(b) Seat back Seat 1 x 2 = 2mks

2

(c) Out feed table set higher than the knives

- Work planed would be tapered out feed set lower than knives
- End of work being gouged at the end of the art

Any 2 x 2 = 4mks

4. (a) – Flat mill file  
- Tapered triangular file

- Plier saw set
- Knotched saw set
- Saw grip

4 x ½ = 2mks

(b) Undersetting

- Saw jamming
- Saw blade bend
- Saw blade buckle or break

Oversetting

- Saw blade may wonder about the saw line or karf
- Saw karf may be very wide characterized with a ridge at its bottom centre
- Saw teeth likely to break

Any 4 x ½ = 2mks

5. (i) Straighten of saw – saw sight along the blades from the tip  
 (ii) Tapes of the blade – hold the tip in one hand and the other with handle and bend it to semi-circle on release the blade should spring back to its original straight position.  
 (iii) Blade quality – the blade is struck or tapped with tip of the fingers. If it is of good quality it rings with clear high tone  
 (iv) Security of saw blade – the handle is held in both hands with the saw teeth pointing downwards; the saw is rapidly moved up and down, if no movement or noise of the blade is felt in the handle, it is securely fastened.

Any 4 x 1 = 4mks

6. (a) Rays Bark Annual growth rings Cambium layer Heartwood Sapwood  
 Sketch – 2mks  
 Any 4 labelled correctly  
 ½ x 4  
 Grand total (4mks)

- (b) Cambium layer – a layer of cells responsible for tree growth  
 - Medullary rays – thin sheets of tissues running radially from inner outwards. They distribute waste products to various parts of the tree trunk for storage



Sapwood – contains water conducting cells which convey water and mineral salts from the roots to leaves

Heart wood- provides timber to wood work

Wastes products stored in heartwood

Any 4 x ½ = 2mks

7. Factors affecting the rate of seasoning

- Thickness of timber
- Size of stickers
- Weather
- Rate of air circulation
- Type of timber

Any 4 x ½ = 2mks

8.  $M.C = \frac{\text{wet weight} - \text{dry weight}}{\text{Dry weight}} \times 100$

$$\frac{300g - 290}{290} \times 100$$

= 3.4%

Grand total = 2 ½ mks

Roles of forester

- Maintain state forest
- Safe guards the water catchment areas
- Supervises forest activities
- Establishment of nurseries and plantations
- Construction of forest roads and bridges

4 x ½ = 2mks

10. 3 X correct isometric dig – 3  
Lowest point x – 1

11. - Boarderline – 2mks  
- Correct views in 1<sup>st</sup> angle orthographic projection – 9mks  
- Dimensioning – 2mks  
- Neatness – 2mks

Grand total 15mks

12. (a) mark outcorrectly the shape of the recess.  
 - By use of a gouge pare out the unwaited material carefully  
 - The bottom of the recess to be leveled by us of square edged chisel (paring chisel)  
 7mks
- (b) Joints used in making a carcase  
 Half lap      Butt joint      Mitre joint      Mortice and tenon      4 x 2 = 8mks

13. (a) Bill of materials

Item	No	Sawn size	Material	Total length	Unit	Total cost
Sides	2	470 x 150 x 15	Cypress	0.94m	100	94
Front	1	320 x 150 x 25	Cypress	0.32m	100	32
Back	1	300 x 150 x 25	Cypress	0.3	100	30
Bottom	1	460 x 310 x 3	Plywood	$\frac{460 \times 310 \times 800}{1200 \times 2400}$	800	40

Total cost 196.00

- Layout, bill of material and answers (5mks)  
 (b) Through housing 1 x 2 = 2mks

(c) Cutting of veneers

4 x 2 = 8mks

14. (a) Grinding the cutting iron of a jack planes  
Nickel cutting edge

- Cutting edge out of square

Cutting edge with level too short

Cutting bevel tool long

Rounded cutting edge

Any 4 x 2 = 8mks

(b) – Making of plywood etc

- Making of blockbaord, batten board
- Construction site/form work
- Ceiling timber members where strength is import

Any 2 x 1 = 2mks

(c) Testing a carcass for squareness using engraduated stick

- Ensure the stick rod is straight
- Mark one point on the stick and place the stick on the carcass diagonal
- mark on the stick the beginning and the end of the diagonal
- Mark same as above the other diagonal
- If the marks coincide the carcass is square

1 x 5 = 5mks

(d) Points to note when nailing

- Select the proper nail for the work
- For greater holding power always nail thinner piece to the thicker piece
- Do not place nails in a straight line as thin tends to split the wood. Nails should be in a staggered pattern
- When nailing thin wood or wood that splits easily holes to accommodate that nails should be made with a broadawl

4 x 1 = 4mks

15. (a) Artisan – A person who performs practical tasks without necessary understanding the theories behind the technology

Apprentice is a person bound by a written contract to serve an employer for a determined period of time (4 years) for the purpose of becoming a qualified technician in the occupation in which he is employed

A craftsman – a person who has the ability to do practical job or work at high level of efficiency or can perform a manipulative skill to an existing and consistent standard

Any 3 x 1 = 3mks

(b) Use of a combination square

(c) Reconditioning of badly damaged saw

- Topping/jointing

- Shaping

- Setting

- Sharpening

- Side dressing

Explaining any 4 x 1 = 4mks

8

**ANSWERS:**

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