

# MACHINE WOODWORKING

## SCHEME OF THE EXAMINATION

There shall be three papers, Papers 1, 2 and 3; all of which must be taken. Papers 1 and 2 shall be a composite paper and shall be taken at a sitting.

**Paper 1** shall consist of forty multiple choice questions of 1 hour duration for 40 marks.

**Paper 2** shall comprise of four short-structured questions out of which any three must be answered in 1 hour for 60 marks.

**Paper 3** shall be a practical test of 2 hour duration for 100 marks.

Council may consider assessing candidates using alternative to practical work test method in the event of constraints of requisite facilities. In this case, the paper shall test knowledge of practical processes, techniques in machine woodworking and safe practices in the workshop.

## DETAILED EXAMINATION SYLLABUS

### Theory Component

S/NO.	TOPICS	NOTES
1.	Tree growth, structure and types	(a) Common West African trees; characteristics and countries of origin. (b) Tree growth, growth process, tree parts and functions. (c) Wood structure: cross section of a tree.
2	Properties of timber	(a) Characteristics of soft and hardwoods. (b) Physical properties of common West African timbers.
3	Timber Processing: (a) conversion (b) seasoning (c) preservation	(a) Concept of timber conversion. (b) Methods of timber conversion. (c) Common market sizes of timber. (d) Concept of timber seasoning. (e) Reasons for seasoning timber. (f) Methods of seasoning timber, including advantages and disadvantages. (g) Types and characteristics of timber preservatives. (h) Application of timber preservatives.
4	Timber defects	Types – natural and artificial defects e.g. knots, shakes, splits, etc.
5	General wood machine shop safety	(a) General machine shop safety habits. (b) Electrical and mechanical safety rules.
6	Safety equipment and devices in the wood machine shop	Identification and uses of common machine shop safety equipment and devices (e.g. fire extinguisher, first aid box, sand bucket, etc).
7.	Safety in the operations of	Specific safety rules guiding the use of each woodworking

	woodworking machines.	machine.
8.	Wood machine layout	(a) Principles of machine shop layout. (b) Flow diagram of a machine shop layout.
9.	Woodwork machines	Parts, accessories, uses and maintenance of machines: cross cut saw, circular saw bench, surface planer, thicknesser, jig saw, sander, band saw, tenoner, mortiser, router, spindle moulder, lathe.
10.	Wood machining	Machine operations involving crosscutting, ripping, grooving surface planing, shooting, chamfering, bevelling, tapering, sanding, curve cutting, mitre cutting, tenonning, turning, rebating, mortising, shaping, moulding.
11.	Business opportunities in machine woodworking	(a) Identification of business opportunities in Machine Woodworking. (b) Feasibility study of business opportunities in Machine Woodworking.
12.	Funds sourcing	Sources of funds – Personal, savings, bank loans, co-operative associations, thrifts, etc.
13.	Operating and managing a wood machine Shop	Setting up and managing a machine shop.

### **Practical Component**

Practical activities will include:

Crosscutting;

Ripping;

Shooting, surface planning; thicknessing; curve cutting;

Sanding;

Mortising; tenonning;

machine parts Chamfering; and accessories

Bevelling and tapering;

Grooving;

Mitring;

Moulding;

Turning;

Cleaning and lubricating

### **LIST OF FACILITIES AND MAJOR EQUIPMENT/MATERIALS REQUIRED:**

#### **Machines**

<b>S/NO.</b>	<b>DESCRIPTION</b>	<b>MINIMUM QUANTITY REQUIRED</b>
1.	Radial Arm CROSS CUTTING Mc	2
2.	Circular Saw	2
3.	Surface Planer	2
4.	Thicknesser	2
5.	Band Saw	2
6.	Moticer (Hollow Square Chisel and Chain	2
7.	Tenoner	2
8.	Router	2
9.	Spindle Moulder	2
10.	Wood Turning Lathe	2
11.	Orbital Sander	2

12.	Veneering Press	2
13.	Dimension Saw	2
14.	Powered Saw	2
15.	Jig Saw	2
16.	Spraying Machine	2
17.	Drill Press – Table Type	2
18.	Drill Press – Standing Type	2
19.	Cutter Grinding Machine	2
20.	Saw Sharpening Machine	2

### **Accessories**

<b>S/NO.</b>	<b>DESCRIPTION</b>	<b>MINIMUM QUANTITY REQUIRED</b>
1.	Circular Saw Blade (rip saw, cross ant saw, combination saw)	5 each
2.	Mitre Gauge	2
3.	Spray Gun	2
4.	Morticing Attachments	Various
5.	Turning Chisels	Various
6.	Calipers (Outside and Inside)	5
7.	Cutter Blocks and Cutters	5 each
8.	Oil Can	5
9.	Spanners	5 sets
10.	Drill Bits	Various
11.	Grinding Block	5
12.	Grease Gun	2
13.	Band Saw Blades (6, 12, 18 and 25mm)	5
14.	Mortising Chisels (6, 9, 12, 15, 18 and 25 mm)	5 each
15.	Setting Pliers	5
16.	Files (round, flat, triangular half round)	5 each
17.	Gate saw set	5

### **SUGGESTED READING LIST**

<b>S/NO.</b>	<b>AUTHOR</b>	<b>TITLE</b>	<b>PUBLISHER</b>
1.	John R. Clayton	Machine Woodworking	Northwood Publication Ltd
2.	J. A. Walton	Woodwork in theory and practice (Metric Edition)	Australasian Publishing Company (London)
3.	D. M. Shaw	Woodwork Design and Practice	Hodder and Stoughton, London
4.	H. E. King	General Certificate Woodwork (3 <sup>rd</sup> Edition)	Harrap, London
5.	D. N. Willacy	Woodwork Book 1 and 2	Nelson, Lagos
6.	Nurudeen et all	Fundamentals of Woodworking	Evans, Lagos
7.	G. W. Brazier and N. A.	Woodwork	Bungay, Richard City

	Harris		
8.	J. Fierre and G. Hutchings	Advanced Woodworking and Furniture Making	
9.	CESAC	Woodwork for Senior Secondary Schools	
10.	J. N. K. Sackey	Woodwork for Senior Secondary Schools	Macmillan
11.	Rom Pettit	Woodwork Made Simple	W. H. Allen and Co. Ltd. London.
12.	John Strefford Guy McMurdo	Woodwork Technology	Schofield and Sims Ltd.
13.	E. J. Wynter	Woodwork	Longman
14.	Frank Hilton	Craft Technology for Carpenters and Joiners	
15.	John L. Feirer and Gilbert R. Hutchings	Carpentry and Building Construction	Glencoe Publishing Company.