THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

074 CARPENTRY AND JOINERY

(For Both School and Private Candidates)

Time: 3 Hours **ANSWERS** **Year: 2008**

Instructions

1. This paper consists of sections A, B and C with total of fifteen questions

2. Answer all questions in section A and B, and two questions in section C.

1. (i) Which of the following saws protect the operator from kick back?
A. Dado saw
B. Rip saw
C. Cut control saw
D. Grooving saw
E. Crosscut saw

The correct answer is C. Cut control saw. A cut control saw is designed with safety features to minimize kickback, providing better control during cutting operations.

(ii) One of the following is not a natural glue.
A. Animal glue
B. Casein glue
C. Urea resin glue
D. Rosin glue
E. Cassava glue

The correct answer is C. Urea resin glue. Urea resin glue is a synthetic adhesive commonly used in woodworking, while the other options are derived from natural sources.

(iii) A tenon consists of all the following parts except
A. shoulder
B. cheeks
C. haunch
D. bevel
E. rabbet

The correct answer is D. Bevel. A tenon joint consists of a shoulder, cheeks, haunch, and rabbet but does not have a bevel as part of its structure.

(iv) When a piece of wood is bent, it
A. stretches along the outside
B. stretches along the inner side
C. bends to the center of the plank
D. stretches on neither side of the bend
E. stretches at the end of the season

The correct answer is A. Stretches along the outside. When wood is bent, the outer fibers experience tension and stretch, while the inner fibers experience compression.

(v) When gluing up flat boards, one of the following is not needed.
A. Bar clamp
B. Hand screw clamp

C. Saw clamp
D. Column clamp
E. G-clamp

The correct answer is C. Saw clamp. Saw clamps are used to hold saws in place, not for gluing up boards.

(vi) Insitu concrete can be defined as concrete that has been made
A. in location
B. in site
C. in a factory
D. in a large unit
E. offsite

The correct answer is B. In site. Insitu concrete is mixed and poured directly at the construction site rather than being prefabricated.

(vii) A mobile scaffold being used by a carpenter to fix some display signs must be
A. light enough for the carpenter to move it on his or her own
B. capable of being moved from the working platform
C. capable of having its wheels locked
D. stable so that when being moved tools will not fall from the working platform
E. fixed rigidly to the wall

The correct answer is C. Capable of having its wheels locked. Locking the wheels prevents unintended movement, ensuring the safety of the carpenter.

(viii) The main purpose of staining is to
A. cover up mistakes and blemishes
B. produce an imitation of another wood
C. cover up the blemishes
D. fill the pores
E. produce a rich and mellow colour

The correct answer is E. Produce a rich and mellow color. Staining enhances the natural beauty of wood by deepening its color and emphasizing the grain.

(ix) The mould on the corner of the stile is called
A. Scotia
B. An ovolo
C. A quadrant
D. An ogee
E. A bead

The correct answer is C. A quadrant. A quadrant moulding is a quarter-circle profile used for decorative finishes.

(x) In modern house construction the locking device that is used in doors is a
A. mortise lock
B. cylindrical rim lock
C. rim rock
D. steel check
E. cylinder lock

The correct answer is E. Cylinder lock. Cylinder locks are commonly used in modern doors due to their security and ease of installation.

2. Match the items in List A with the responses in List B by writing the letter of the correct response beside the item number.

List A:
i. A long plane particularly useful in edge planing of long boards
ii. The purpose of back iron in a jack plane
iii. The most suitable saw to cut across the middle of a sheet of thin plywood
iv. Nail primarily used for flooring purposes
v. The bottom part of a plane
vi. A marking gauge with two spurs
vii. The guard that is fitted over the blade of a circular saw
viii. In saw maintenance, the operation involved in filing the points until the teeth are an equal line
ix. Using a router, the process along the edges of timber
x. Makes a pilot hole for screw

List B:
A. Brad awl
B. Break the shavings
C. Crosscut saw
D. Crown guard
E. Flat gauge
F. Fence guard
G. Foot panel
H. Nail punch
I. Mortise gauge
J. Panel saw
K. Planning timber
L. Seat of plane
M. Router plane
N. Rough shaping

O. Setting saw
P. Smoothing
Q. Surfacing
R. Topping

Answers:
i - K. Planning timber
ii - B. Break the shavings
iii - C. Crosscut saw
iv - H. Nail punch
v - L. Seat of plane
vi - I. Mortise gauge
vii - D. Crown guard
viii - O. Setting saw
ix - M. Router plane
x - A. Brad awl

3. Differentiate the uses of a pencil and marking knife in carpentry and joinery.

A pencil is used for general marking, layout work, and guiding cuts on wood surfaces, while a marking knife is used for precise and sharp scribing, ensuring accurate joinery cuts.

4. Name two types of bench saws and state their special uses.

i. Table saw – Used for making precise rip cuts and crosscuts on wood.
ii. Band saw – Ideal for cutting curves, irregular shapes, and resawing thick timber.

5. State two safety precautions to be observed when handling sharp-edged tools.

i. Always use protective gloves and handle tools carefully to prevent accidental cuts.
ii. Keep blades sharp and properly stored to avoid slipping and causing injuries.

6. Name two holding devices in woodwork and state their special uses.

i. Bench vice – Holds wood securely while sawing, chiseling, or planing.
ii. G-clamp – Used for temporarily holding workpieces together during gluing or assembly.

7. (a) When is a sliding door provided?

A sliding door is provided in areas where space-saving is necessary, such as in small rooms, patios, or wardrobes, as it does not require additional space for swinging open.

(b) What type of doors would you suggest for the bathroom and dining room of a modern residential building?

i. Bathroom – A PVC or frosted glass door to ensure privacy and moisture resistance.
ii. Dining room – A wooden panel or glass-paneled door to provide an aesthetic and welcoming look.

8. What is the difference between a stair and a staircase?

A stair refers to a single step within a flight, whereas a staircase is the complete assembly of stairs, including treads, risers, balustrades, and handrails.

9. What are the requirements of a good formwork?

i. It should be rigid and strong to support the weight of concrete.
ii. It must be easy to remove after the concrete sets without damaging the structure.
iii. It should have smooth surfaces to ensure a fine finish.
iv. It must be cost-effective and reusable.

10. Name two types of nails and describe the features of each type. State where each type is used.

i. Wire nail – A general-purpose nail with a smooth shank, used in rough carpentry and framing.
ii. Brad nail – A thin nail with a small head, used for finishing and securing trim without noticeable marks.

11. Name two types of sanding machines and state their major applications.

i. Belt sander – Used for rapid material removal and surface leveling.
ii. Orbital sander – Used for fine sanding and finishing work on wood surfaces.

12. Draw a simple sketch to show herringbone strutting.

Herringbone strutting consists of diagonal wooden braces installed between floor joists to improve stability and reduce deflection.

13. (a) Define the term floor.

A floor is the lower surface of a room on which occupants walk, typically made of materials like wood, concrete, or tiles.

(b) What are the requirements for a good floor finish?

i. It should be durable and resistant to wear and tear.
ii. It must provide a smooth and attractive surface.
iii. It should be easy to clean and maintain.
iv. It must be slip-resistant to ensure safety.

(c) Mention two components of a floor.

i. Subfloor – The structural base that supports the floor covering.
ii. Floor covering – The final layer, such as tiles, wood, or carpet, providing aesthetics and protection.

(d) What is the difference between bridging joists and binders in a timber floor system?

Bridging joists are intermediate supports placed between main joists to prevent deflection, while binders are horizontal members that distribute loads across multiple joists to enhance structural stability.

14. (a) Explain the procedure to be followed in squaring the dimensions of a small board.

i. Mark a reference edge using a straight edge or square.
ii. Trim one edge using a plane or saw to create a straight reference.
iii. Measure and mark the required width using a marking gauge.
iv. Cut along the marked line and check for accuracy using a square.

(b) (i) What is scaffolding?

Scaffolding is a temporary structure used to support workers and materials during construction or maintenance of buildings.

(ii) Mention four types of scaffolding.

i. Single scaffolding – Used in brick masonry work, supported by the building itself.
ii. Double scaffolding – Used in stone masonry, consisting of two rows of scaffolds for added stability.
iii. Suspended scaffolding – Platforms suspended by ropes or chains for working at heights.
iv. Cantilever scaffolding – Supported at one end while the other end extends outwards, used in bridge construction.

(iii) Explain brick layer scaffolding.

Bricklayer scaffolding consists of vertical standards, ledgers, putlogs, and planks for supporting workers during bricklaying operations.

15. (a) Differentiate a ledged and battened door from a ledged, braced, and battened door.

i. A ledged and battened door consists of vertical wooden battens with horizontal ledges for support.
ii. A ledged, braced, and battened door includes diagonal braces to provide additional strength and prevent sagging.

(b) Sketch a well-labeled diagram of a ledged, battened, and braced door. Show all the necessary parts.

A ledged, battened, and braced door features vertical battens, horizontal ledges, and diagonal braces for reinforcement.

(c) Explain the reasons for a screw to have stronger holding power than a nail.

i. Threads – The screw's threads create a mechanical grip within the material, preventing loosening.
ii. Withdrawal resistance – Screws provide better resistance against pulling forces compared to smooth nails.
iii. Torque application – Screws can be driven into materials with controlled pressure, ensuring a firm hold.

(d) Show the main functions of the following items.

i. A stay – Used to hold a window or door in an open position.
ii. A set of casters – Used for mobility, allowing furniture or equipment to be easily moved on wheels.