

CHRISTIAN SOCIAL SERVICES COMMISSIONS (CSSC)
NORTHERN ZONE JOINT EXAMINATIONS SYNDICATE (NZ-JES)



FORM FOUR PRE NATIONAL EXAMINATION 2026

074 WOODWORK AND PAINTING ENGINEERING.

Marking scheme

Section A

Question 1

I	li	lii	Iv	V	Vi	Vii	Viii	Ix	x
C	D	D	B	C	D	C	D	C	A

Question 2

I	li	lii	Iv	V	Iv
E	D	F	B	C	A

Section B.

3 (a)

1. Good covering power
2. Durability
3. Quick drying
4. Resistance to weather

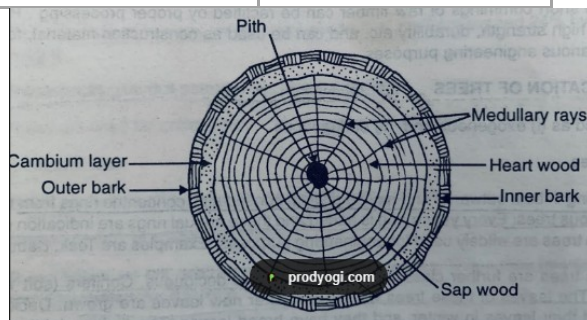
5. Pleasant appearance
6. Non-toxic and safe

3 (b)

- 1) Prepare the Surface - ensure clearness of the surface before painting (setup)
2. Apply First Coat of Paint - initial layer of paint
3. Allow Drying - as per manufacturers
4. Apply Second Coat - for better finishing.
5. Final Touch and Inspection - inspect touch ups

4. Parts of tree log

Pith
True wood/heart
Sapwood
Medullary rays
Annual rings
Cambium layer
Outer bark



5. a) Temporary structure

is a short-term support built during construction to stabilize or carry loads until the permanent structure is completed. It is removed once the permanent work is strong enough.

b) (i) Task performed by each shore

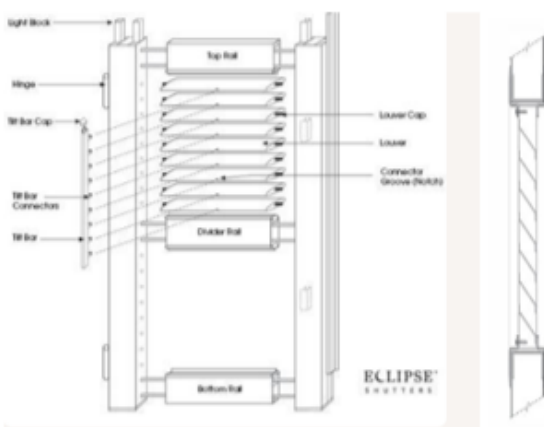
- **Flying shore** → Supports two parallel walls that are weak or unsafe, preventing them from collapsing inward.
- **Raking shore** → Provides sloping support to a weak wall, holding it upright and stable.
- **Dead shore** → Carries vertical loads from beams, slabs, or roofs during repair or alteration

ii) Example of the activities carried by each shore.

- **Flying shore**→ Used when two buildings close together have walls that need temporary support during excavation or repair.
- **Raking shore**→ Applied when a single wall of a building is cracked or leaning and needs bracing during reconstruction.
- **Dead shore**→ Used when openings (like doors or windows) are cut into a load-bearing wall, so the load above is temporarily supported.

6. a) Louvered door with elevation.

Door frame with its parts; a)Stile b)Bottom rail,c)Middle rail d)Top rail, e) Louvers



b. Common joints used

- **Mortise and tenon joint**
- **Dowel joint**
- **Bridle joint**

7. Uses of hand saw

- **Rip saw**→ Used for cutting timber **along the grain**.
- **Crosscut saw**→ Used for cutting timber **across the grain** cleanly.
- **Tenon saw**→ Used for making **precise joints** such as mortise and tenon.
- **Panel saw**→ Used for cutting **small panels or thin boards**.
- **Coping saw**→ Used for cutting **curves and intricate shapes** in wood.
- **Bow saw**→ Used for cutting **logs, rough timber, and outdoor work**.
- **Dovetail saw** → Used for cutting **fine dovetail joints** in furniture making

8.

- **Good covering power** → Paint should cover the surface uniformly without showing the undercoat.
- **Durability** → It should last long without peeling, cracking, or fading.
- **Quick drying** → Should dry fast to save time and reduce dust sticking.
- **Weather resistance** → Should withstand rain, sunlight, and humidity.
- **Pleasant appearance** → Should give a smooth, glossy or matt finish as required.
- **Non-toxic and safe** → Should not contain harmful chemicals or strong odors.
- **Washability** → Should allow cleaning without losing its finish.
- **Adhesion** → Should stick firmly to the surface without flaking.
- **Resistance to corrosion** → Especially important for metal surfaces, preventing rust

Section C

9. i) **Four reasons architects prefer timber floors:**

1. **Aesthetic appeal** → Timber floors give a warm, natural, and attractive look.
2. **Ease of construction** → Timber floors are relatively easy to install compared to concrete.
3. **Light weight** → Timber reduces load on the foundation compared to heavy concrete floors.
4. **Thermal and sound insulation** → Timber provides better comfort by reducing heat transfer and noise.

ii) **Requirements of quality timber floor:**

1. **Well-seasoned timber** → Timber must be dried to prevent warping, shrinkage, or decay.
 2. **Proper treatment** → Timber should be treated against termites, fungi, and moisture.
- **Proper ventilation** → Adequate air circulation under the floor to prevent dampness and decay.
 - **Correct joist spacing** → Joists must be spaced appropriately to carry loads without sagging.
 - **Strong sleeper walls** → Honeycombed sleeper walls should be firm and allow ventilation.
 - **Moisture protection** → A damp-proof course (DPC) must be installed to stop moisture rising from the ground.
 - **Smooth and well-finished boards** → Floor boards should be planed, fitted tightly, and free from defects.

- **Proper fixing** → Boards must be nailed or screwed securely to joists to avoid squeaking or loosening

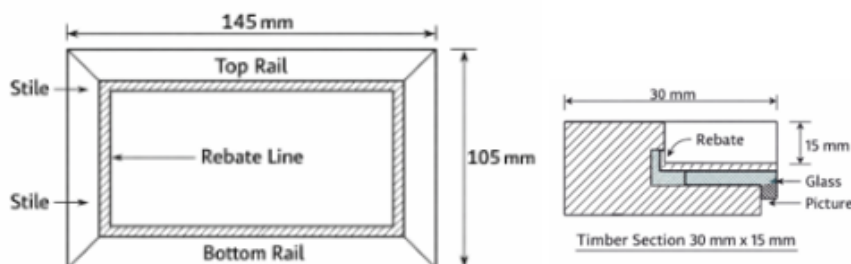
iii) Floor parts.

- **Floor board** (flooring surface)
- **Joist** (horizontal support beams)
- **Ventilator** (opening for air circulation)
- **DPC** (layer preventing moisture rise)
- **Concrete foundation** (base structure)
- **Ground level**
- **Sleeper wall** (honeycombed wall supporting joists and allowing ventilation)

10.

(a) Front Elevation of Picture Frame (Scale 1:2)

- Actual size: 290 mm × 210 mm.
- Scaled size: 145 mm × 105 mm (since scale is 1:2).
- Timber section: 30 mm × 15 mm.
- Elevation sketch should show:
 - **Stiles** (vertical members).
 - **Rails** (horizontal members).
 - **Rebate** (groove for holding the picture glass).
 - Labels for overall dimensions and timber size.



(b) (i) Specific joint and hand tools

- **Joint: Mitre joint** — commonly used for picture frames to give neat corners.
- **Hand tools:**
 - **Tenon saw** → for accurate cutting of mitres.
 - **Mitre box** → to guide saw cuts at 45°.
 - **Hammer or Mallet** → for fixing.

(b) (ii) How to make and strengthen the joint

1. **Cutting mitres** → Cut ends of stiles and rails at 45° using mitre box and tenon saw.
2. **Joining corners** → Apply glue on mitre faces and press together.
3. **Strengthening** → Reinforce with **glue blocks**, **pins**, or **splines** at the mitre joint for durability.

11. Ghg

a) Concept of window

A **window** is an opening built in a wall to allow **light, air, and visibility** into a room. It may be fitted with glass, shutters, or grills for protection and control of ventilation

b) Functions of windows.

Lighting → Admit natural daylight into the room.

Ventilation → Allow fresh air circulation for comfort and health.

View and communication → Provide outside visibility and connection with surroundings.

Aesthetic and architectural value → Enhance the appearance and style of the building.

c) Types of wooden windows

Casement windows

Sliding windows

Double-hung windows

Louvered windows

Pivot windows