



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate 2015

Marking Scheme

Construction Studies

Ordinary Level

Note to teachers and students on the use of published marking schemes

Marking schemes published by the State Examinations Commission are not intended to be standalone documents. They are an essential resource for examiners who receive training in the correct interpretation and application of the scheme. This training involves, among other things, marking samples of student work and discussing the marks awarded, so as to clarify the correct application of the scheme. The work of examiners is subsequently monitored by Advising Examiners to ensure consistent and accurate application of the marking scheme. This process is overseen by the Chief Examiner, usually assisted by a Chief Advising Examiner. The Chief Examiner is the final authority regarding whether or not the marking scheme has been correctly applied to any piece of candidate work.

Marking schemes are working documents. While a draft marking scheme is prepared in advance of the examination, the scheme is not finalised until examiners have applied it to candidates' work and the feedback from all examiners has been collated and considered in light of the full range of responses of candidates, the overall level of difficulty of the examination and the need to maintain consistency in standards from year to year. This published document contains the finalised scheme, as it was applied to all candidates' work.

In the case of marking schemes that include model solutions or answers, it should be noted that these are not intended to be exhaustive. Variations and alternatives may also be acceptable. Examiners must consider all answers on their merits, and will have consulted with their Advising Examiners when in doubt.

Future Marking Schemes

Assumptions about future marking schemes on the basis of past schemes should be avoided. While the underlying assessment principles remain the same, the details of the marking of a particular type of question may change in the context of the contribution of that question to the overall examination in a given year. The Chief Examiner in any given year has the responsibility to determine how best to ensure the fair and accurate assessment of candidates' work and to ensure consistency in the standard of the assessment from year to year. Accordingly, aspects of the structure, detail and application of the marking scheme for a particular examination are subject to change from one year to the next without notice.

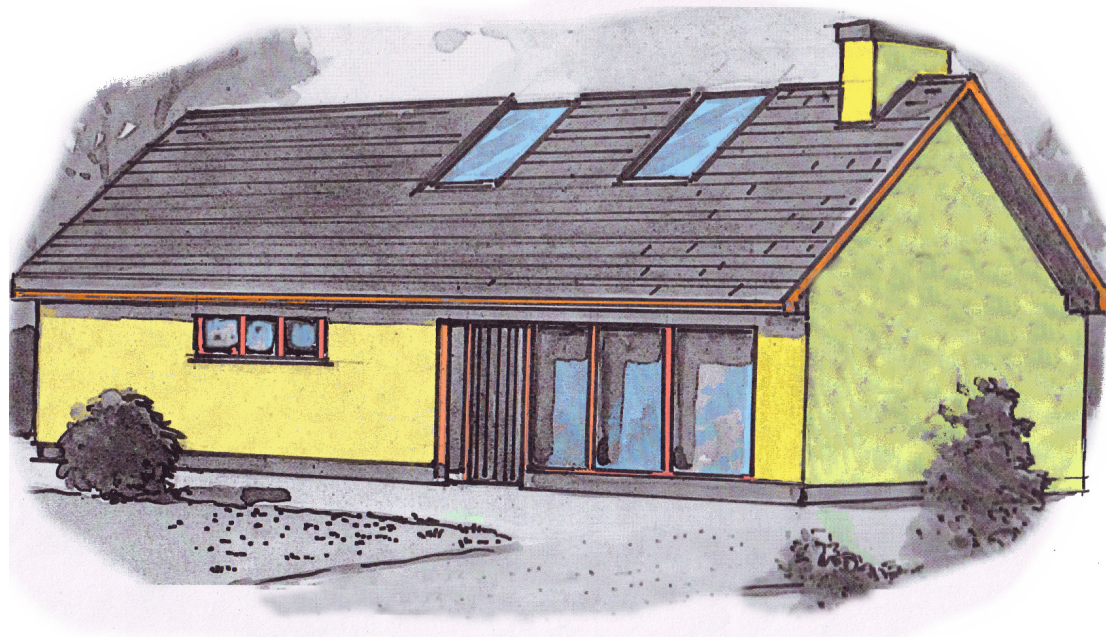


Coimisiún na Scrúduithe Stáit
State Examinations Commission

Scrúdú Ardteistiméireachta 2015

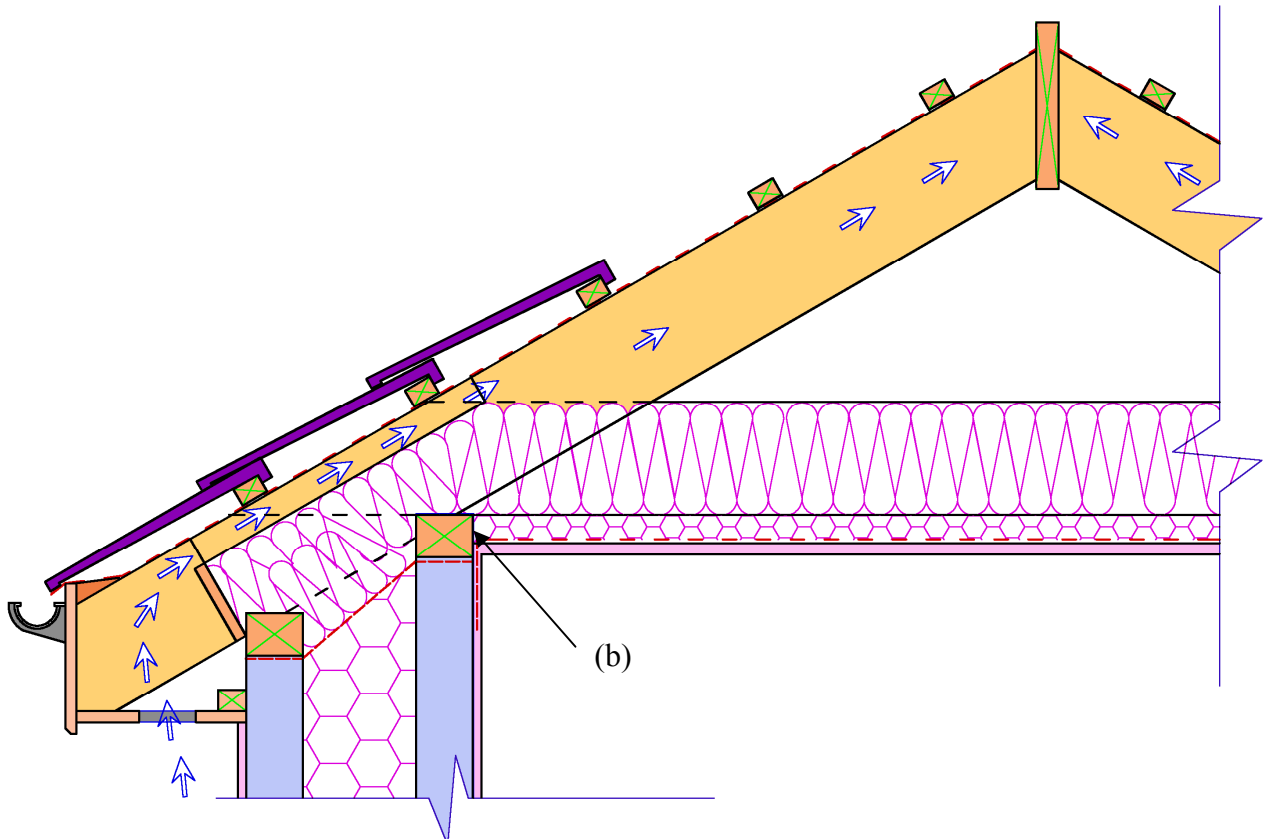
Construction Studies

Theory – Ordinary Level



Marking Scheme

Ceist 1. Part (a)



Typical Specifications

- Ridge board 250 mm × 35 mm
- Concrete tiles
- Softwood battens 44 mm × 35 mm
- Vapour diffuse/Breather membrane overlapped and taped
- Rafters 200 mm × 40 mm @ 450 mm centres
- Roof insulation to comply with current building regulations – min 200 mm
- Ceiling joists 200 mm × 40 mm @ 450 mm centres
- Airtightness seal to internal wall
- Insulated plasterboard with skim coat
- 100 mm × 75 mm double wallplate fixed to blockwork
- 15 mm internal plaster with hardwall finish
- Concrete block inner leaf 100 mm
- Full-fill insulated cavity - 200 mm
- Concrete block outer leaf 100 mm
- 19 mm external render
- Soffit 12 mm
- Fascia 25 mm
- Eaves gutter 100 mm.

N.B. Any alternative detailing which complies with current Building Regulations is acceptable.

Part (b) – Method of securing wallplate to external wall

- The wallplate is secured by fixing vertical L shaped stainless steel straps to both the wall and the wallplate.

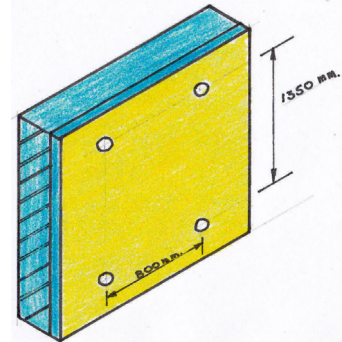
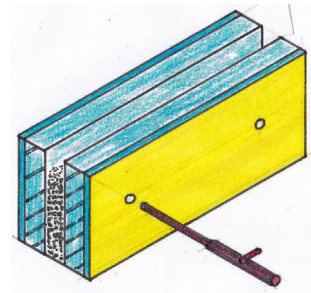
Ceist 2 - Part (a) Typical Specifications

Filling the cavity with insulation - such as

This operation is carried out by specialist firms.

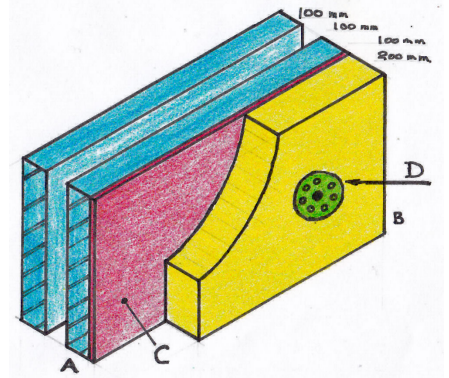
The procedure is as follows:

- Holes of 22 mm diameter are drilled through the external leaf
- The holes are usually spaced at 800 mm horizontally and at 1350 mm vertically
- Special care is taken at damp proof courses, at heads of windows and doors
- Extra holes are drilled around doors and windows
- This will ensure proper filling of the cavity
- The polystyrene beads are then pumped into the cavity
- As the procedure takes place, a light coating of glue is applied to the beads
- When the glue sets the beads will form a solid structure
- When pumping is complete the holes are filled.



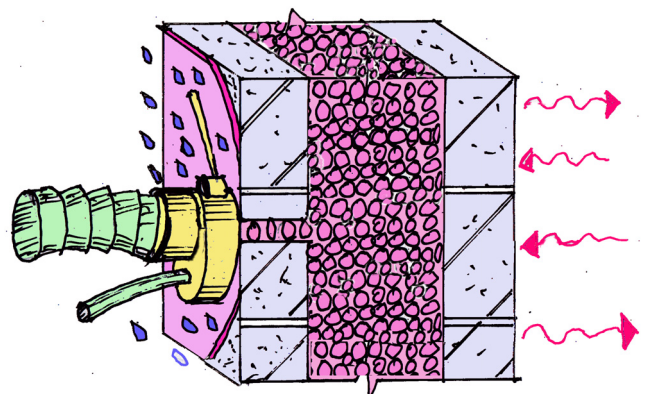
Adding an external system of insulation to the walls - such as

- The first row of insulation board B is fixed in place resting on a stainless steel track
- The boards are fixed in position using a special adhesive C
- All rows of insulation are fixed in place and the adhesive is allowed set
- Mechanical fixings D are used to fix each board in place
- The number of fixings is typically seven per square metre
- Special longer fixings are available for thicker insulation boards
- The fixings are installed by drilling through the insulation and into the wall
- The fixings are then hammered into place
- The typical insulation materials are: polystyrene, mineral fibre board, woodfibre board etc.



Part (b) Two advantages of insulating the house – such as

- It reduces the heat loss
- Improves the thermal comfort of occupants
- Energy bills are reduced
- It is better for the environment, as less fossil fuels are used to heat the house
- It improves the U-value rating
- It improves the Building Energy Rating (BER).
- The house will be warmer
- Reduces condensation and mould due to dampness
- Retains the heat in the external wall and the wall becomes a heat store /sink
- Better indoor environment – no extremes of heat or cold
- Both methods of insulation are a practical and efficient systems of insulating an existing building.

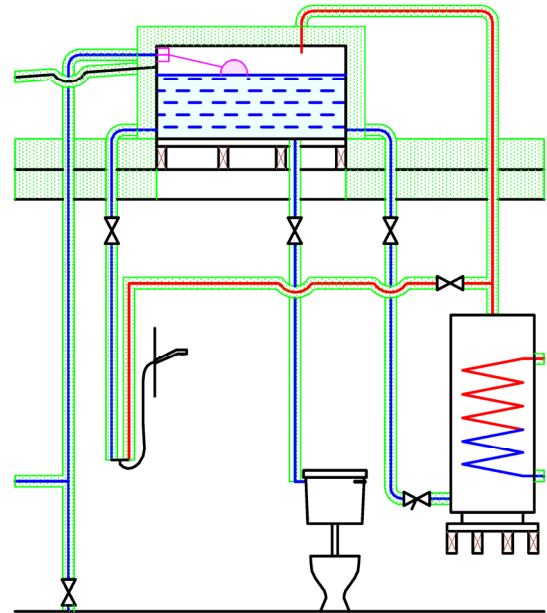


Ceist 3 Part (a) - Typical Specifications

Hot and cold water to a mixer shower and cold water to a toilet cistern – typical sizes

- 15 mm rising main with stop valve
- Storage tank
- 22 mm min overflow
- 22 mm cold feed from storage tank to pre-insulated hot water cylinder
- Pre-insulated hot water cylinder
- 22 mm expansion pipe from hot water cylinder
- Hot water supply to shower- 22 mm
- Cold water supply to shower - 22 mm
- Cold water supply to toilet cistern - 15 mm
- Valves
- Insulation to storage tank, cylinder and pipework
- Labelling.

N.B. Any alternative detailing which complies with current Building Regulations is acceptable.

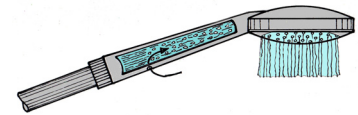


Part (b)

Two methods that would reduce the use of water in a bathroom

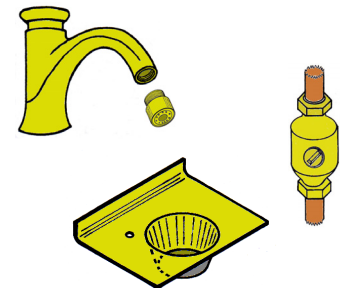
Shower - such as

- Install a low-flow eco-shower to reduce flow rates but not the performance of the shower
- Special devices reduce the flow of water through the showerheads. These mix air with the water while others pulsate the water – aerated showers
- Reduce water temperature in shower, shorter showers
- No power showers as they use a lot more water and are wasteful
- Spend less time in the shower or time how long it takes to have a shower.



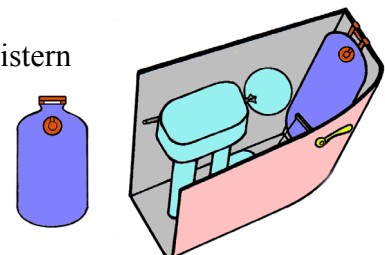
Wash hand basin - such as

- Do not run the tap when not necessary - brushing teeth
- Fit a tap aerator
- Install push button taps
- Fit an inline regulating valve to control the flow of water and reduce water wastage
- Small, conical shaped wash hand basins reduce the amount of water used
- Install infra-red sensors. Taps will start and stop automatically.



Toilets - such as

- Place a plastic bottle or Hippo bag water saver into the toilet cistern
- Install low flush cisterns
- Fit dual-flush cisterns
- Check toilet cistern for leaks.



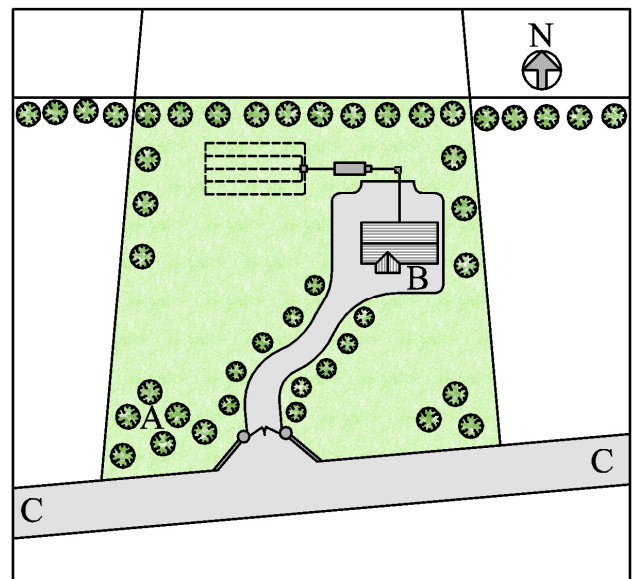
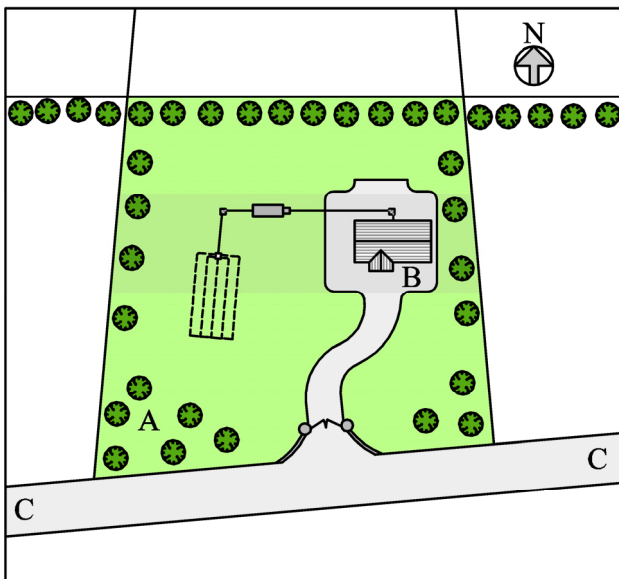
Bathtub - such as

- Fit a tap aerator
- Bath uses more water than showers and showers should be more frequently used.

Ceist 4

Part (a)

Freehand sketch of the given site showing the position of entrance, driveway, septic tank and percolation area



Part (b)

Reasons for selecting the preferred location - *such as*

Entrance to the site

- The entrance should be located on a straight stretch of road to ensure safety
- The entrance should have an unobstructed clear view on both sides. The distance is determined by the design speed of the road
- The entrance must accommodate this line of vision
- The line of vision or sight line is measured at 2.4 metres back from the edge of the road and this is increased to 4.5 metres in the case of combined residential and agricultural entrances
- Retain as much of the existing hedgerows as possible
- The entrance is usually splayed at 45° to make the entrance safe for vehicular use
- The entrance needs to be a minimum of 12 metres wide at road edge for safety
- Entrance piers should complement local styles / tradition
- Set the gates back to allow parking of a car when opening gates
- Open the gates inward for safety
- Simple entrance to announce the building
- Avoid siege architecture of high walls and alarmed gates.

Driveway to the house - *such as*

- Long straight visible driveways not recommended
- Driveways should preferably follow the contours of the site
- Driveways should preferably be curved to naturally reduce speed within site
- Avoid hard tarmacadam surfaces on driveways
- Shale or gravel surfaces facilitate disposal of ground water and minimise the visual and environmental impact on landscape.

Location of septic tank and percolation area - such as

- The chosen location is sufficient to comply with the building regulations regarding septic tanks and percolation area
- Septic tank should be located a minimum of 7.0 metres from the house and 10.0 metres from the percolation area
- The percolation area is 3.0 metres from site boundary and 10.0 metres from road boundary
- The distribution box should be located a minimum of 20.0 metres from the house
- The distribution box should distribute flow evenly to a minimum of four percolation pipes
- The slope of percolation pipes should be 1:200 with 100 – 110 mm perforated pipes
- Pipe runs should not exceed 18.0 metres
- The distance between each pipe should be 2.0 metres
- Width of trench 450 mm, depth of trench 800 mm

Part (c)**Types of trees - such as**

- Silver Birch, Rowan (Mountain Ash), Beech, Hazel, Cherry, Ash, Wild Crab Apple tree
- Oak, Poplar, Pine, Hornbeam, Holly
- Mixed species hedgerow – Whitethorn, Blackthorn, Beech, Field Maple, Hazel
- Plant trees, shrubs and plants indigenous to area
- Plant deciduous shelterbelt to disperse wind
- Retain existing trees, hedgerows or natural boundaries
- Avoid planting exotic and evergreen trees along site boundaries.

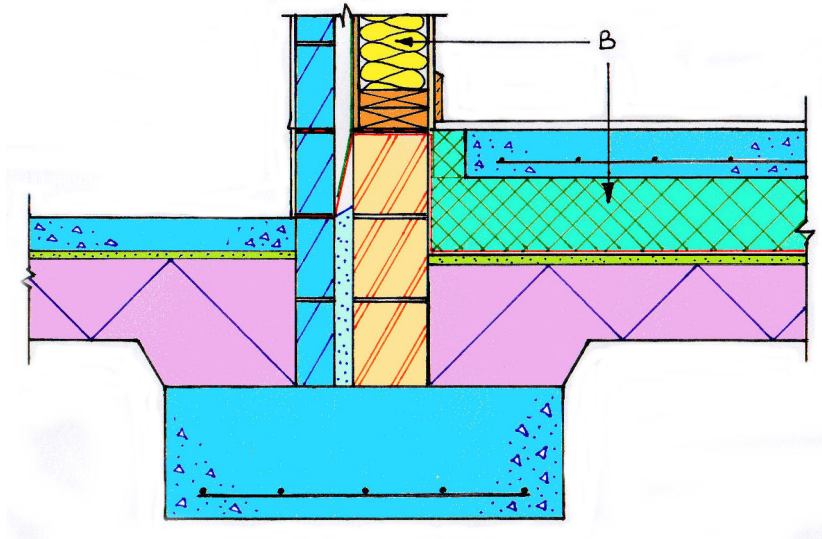
Two advantages of planting the recommended trees on the site - such as

- Trees support nature and provide habitat and food for wildlife
- They absorb CO₂ and release oxygen
- They act as sound-screen and reduce intrusive noise
- Trees support the overall biodiversity
- They provide shelter from the prevailing winds
- Deciduous trees provide shelter from the sun in summer
- They also allow maximum light to the house in the winter
- These trees are native to Ireland or are naturalised over years
- These trees allow the house to blend into the surrounding countryside
- Trees soften the visual impact of the house on the landscape
- The trees provide a backdrop to the house in the summer
- These trees are suitable for all soil types
- The trees provide privacy from the public road and from neighbours.

Ceist 5

Part (a) – A traditional strip foundation supports the external wall a dwelling house. The external wall is of timber-frame construction.

Note: Any alternative detailing which complies with current Building Regulations is acceptable.



Part (a) - Design details of foundation, wall and floor – typical sizes

- External render – 19 mm
- External leaf 100 mm block
- 50 mm ventilated cavity
- Vapour diffused membrane/airtightness layer
- Racking board - such as oriented strand board (OSB) and plywood
- Studs 200 × 50 mm @ 400 mm centres with insulation between studs
- Sole plate 200 × 50 mm
- Damp Proof Course - DPC
- Intelligent vapour check and airtightness membrane overlapped, taped and sealed to the floor
- 12.5 mm plasterboard with skim finish
- Skirting board
- Quarry tiles – 20 mm
- Reinforced concrete slab
- 200 – 300 mm rigid insulation
- Radon barrier or damp proof membrane
- 50 mm sand blinding
- 300 mm hardcore
- Aerated concrete insulation blocks
- Cavity fill
- Hardcore and footpath.

N.B. Any alternative detailing which complies with current Building Regulations is acceptable

Part (b) – Position of insulation in the wall and floor

- Wall – 200 mm rigid, blown insulation, board or quilt insulation between timber studs
- Floor – Rigid insulation 200 mm – 300 mm fitted above radon barrier and concrete slab – thickness varies according to conductivity of insulation material.

Ceist 6 - Part (a) Safety signs for a construction site



Hand protection



Ear protection



Eye protection

Part (b)

One specific activity where the personal protective equipment should be worn on a construction site

Hand protection – such as

- Laying of blocks or bricks
- Moving roof tiles or slates
- Handling sharp materials
- Building or working with stone
- Fixing or removing scaffolding
- Working with corrosive or toxic substances
- Any other valid activity.

Ear protection – such as

- Ear protection is used for many activities on a building site
- Hammer action drill
- Using a compressor
- Using a percussion hammer/drill
- Cutting concrete lintels or cills with con saw
- Using a mechanical woodworking saw
- Use where noise level is continuous at a level of 85-90 decibels or greater
- Any other valid activity.

Eye protection – such as

- Mechanically cutting concrete or steel
- Drilling concrete or steel
- Using hammer, angle grinder or nail gun
- Welding steel materials
- Painting ceilings or chipping loose paintwork
- Any other valid activity.

Part (c)

Outline two activities in the construction studies room where it is recommended that personal protective equipment should be worn

Drilling wood, metal or acrylic - such as

- Eye protection should be worn when drilling these materials.
- Small particles are a danger to the eyes

- Ear protection should also be worn
- Ears are sensitive and may be damaged by continuous loud noise
- Gloves should be worn if dealing with sharp edges
- Hands must be protected from dangerous materials.

Cutting wood with jig saw or band saw - such as

- Eye protection should be worn to protect the eyes from small chips
- Ear protection should be worn to protect the ears from the noise generated
- Dust mask should be worn if cutting plywood or MDF boards.
- These materials generate very fine dust and a mask will prevent inhalation.

Using a woodturning lathe - such as

- A special visor should be worn when using the lathe
- This offers protection from flying chips or particles
- A dust mask should be worn
- This will protect the operator from fine dust particles
- Ear muffs should also be worn.

Using mechanical sanders and belt sander - such as

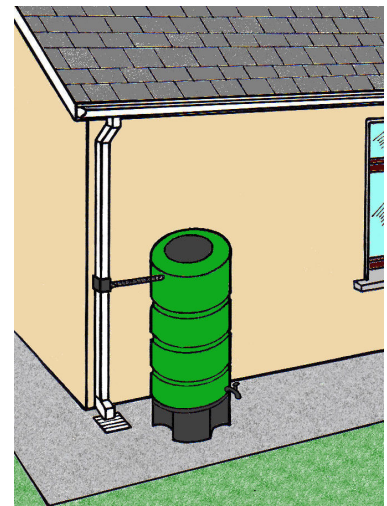
- A dust mask should be worn, also eye and ear protection
- These will protect the operator from fine dust particles, noise.

Painting or varnishing - such as

- Gloves should be worn to protect the hands
- Respiratory mask should be worn in confined areas
- Use water-based paints and varnishes where possible.

Ceist 7 Part (a) the pipework necessary to collect and store rainwater in a water butt

- Rainwater is collected from sloping roof and flows into the eaves gutter
- Rainwater flows from the eaves gutter into the downpipe
- A diverter is connected to the downpipe and diverts the rainwater into a connecting hose
- The hose connects the diverter to the water butt
- The rainwater flows through the hose into the water butt
- When the water butt is full the diverter directs the rainwater into the downpipe and down into the gully
- The water butt usually sits on a stand
- A tap is fitted close to the bottom of the water butt.



Part (b)

Two advantages of using a water butt to store rainwater – such as

- Water butts are environmentally friendly as they reduce the amount of treated water used
- Help reduce water bills where water meters are installed
- Rainwater is satisfactory for tasks such as watering gardens and washing cars
- Water butts are not expensive and they can be linked in series for greater storage capacity
- A water butt is easy to fit and maintain
- Traditionally people placed barrels under drain pipes to collect rainwater for tasks such as washing and cleaning in the house.

Two disadvantages of using a water butt to store rainwater – such as

- The amount of stored rainwater is limited to the size of the butt
- Rainwater usage is limited to the amount of water in the butt
- The water in the butt is not pressurised
- The rainwater may be contaminated by dirt or other contaminants from roofs.

Part (c)

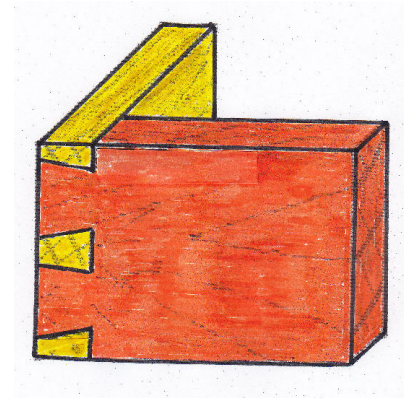
Two reasons why it is advisable to harvest rainwater – such as

- Rainwater harvesting encourages users to conserve water
- Water harvesting supplements main water supply
- Most sloped roofs act as collectors for harvesting water
- Rainwater can be used for tasks that do not require potable water
- Rainwater storage capacity can be sized to suit the demand for water
- Harvested rainwater provides water when there is drought
- Rainwater is often free from many chemicals found in the ground water
- Rainwater harvesting can provide an independent water supply
- Harvested rainwater reduces demand on wells which can help to maintain ground water levels
- Large storage units can reduce flooding in low-lying areas.

Ceist 8

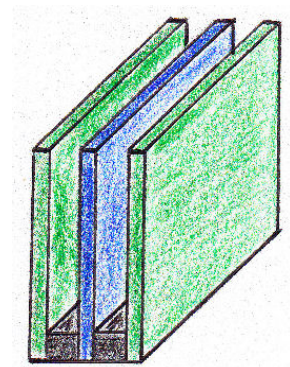
Box dovetail joint – such as

- The joint is used for the manufacture of box shapes
- This is a common joint used in high quality furniture
- It may be constructed by hand or with special jigs
- The slope of the dovetail is important for maximum strength
- The slope for a dovetail in softwood is usually 1:6
- The slope for a dovetail in hardwood is usually 1:8
- The joint gives decorative appearance when correctly made
- Contrasting woods may be used to highlight the dovetail effect.



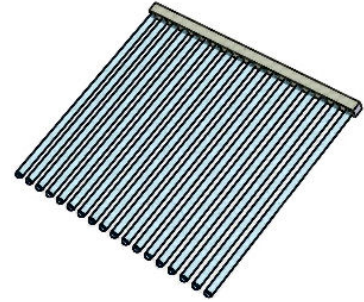
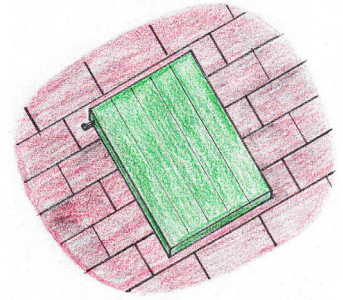
Triple glazing – such as

- Three layers of glass are used with cavity between the glass panels
- By using three layers of glass the panel is a better insulator
- The panel also has a better acoustic performance
- Low-e coating on the panes reflect heat back into house
- Cavities filled with argon or krypton gas to reduce heat loss
- Triple glazing improves the U-value of the window
- Triple glazed panels provide a comfortable indoor temperature
- Triple glazing reduces condensation.



Solar panel – such as

- A solar panel collects solar radiation and converts it into heat
- The solar panel is usually situated on a south facing roof
- Solar panels may also be placed on secure fixing at ground level
- The panels may be used in conjunction with other forms of heating
- A solar panel is environmentally friendly and helps reduce CO₂ emissions
- A solar panel may be in the form of flat plate, evacuated tube and photovoltaic
- The tubes can be mounted to follow the path of the sun.



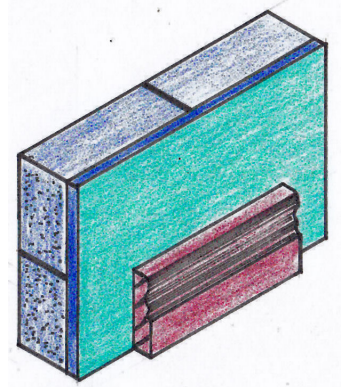
Cordless drill – such as

- This is a battery operated drill and is not directly connected to AC power when in use
- It uses rechargeable batteries for its power
- The drill is available with similar features to an AC mains powered drill
- The drill is available with hammer action
- Cordless drills are used for driving screws
- A clutch is fitted to prevent damage to screw heads
- They are also available as a right angle option for work in tight spaces
- Cordless drills are very useful for all types of construction work
- They come in several power and speed settings
- Light low-voltage drills are useful for DIY work
- Higher voltage drills are heavier and are more suitable for robust work.



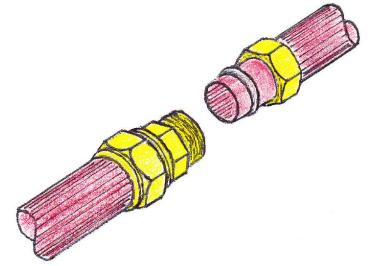
Skirting board – such as

- This is a decorative board fitted at the junction of a wall and a floor
- It forms a neat finish to the junction of the wall and floor
- May be of hardwood, softwood or MDF
- The board is available in various lengths
- Typical section sizes are: 100 mm × 15 mm to 200 mm × 20 mm
- Skirting boards are mitred at internal and external corners
- A wide variety is available with many different profiles to suit differing situations.



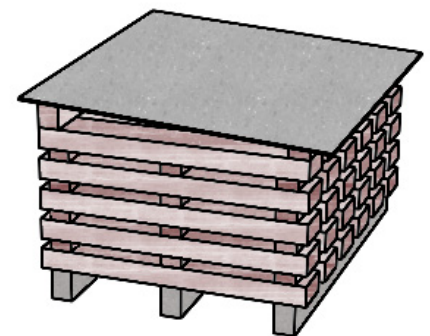
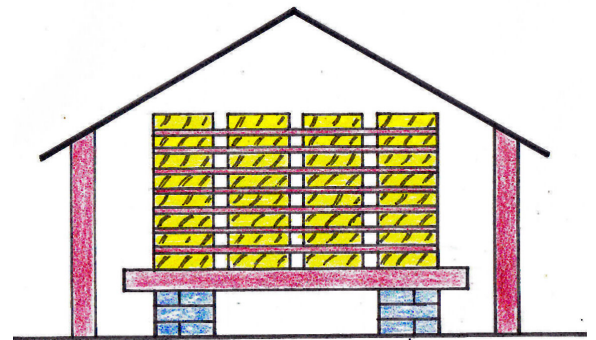
Compression fitting – such as

- This joint is used in plumbing
- It is used to join copper and PVC pipes
- The joint is made of brass or PVC and is available in a wide range of sizes
- The ends of the pipes are cut square and the nut and olive are fitted over the pipe
- The pipe end is then pushed into the joint
- PTFE (Poly tetra fluoro ethylene) tape may be used as part of the completed joint
- The nut is tightened firmly compressing the olive to form a watertight joint.



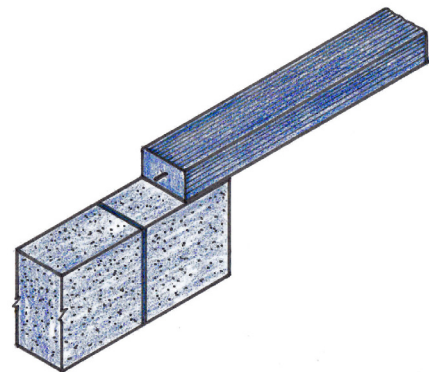
Natural seasoning – such as

- This is a traditional method used to reduce the moisture content of wood
- The planks of wood are laid parallel to each other with a space between them
- The planks are separated by sticker pieces usually 25mm × 15mm in section
- The planks are stacked in an open shed and dried by the prevailing weather conditions
- The stack of wood should rest on a clean, dry and level base
- The ends of the planks are painted to prevent splitting.
- The stack may rest on brick piers or on concrete base
- Wood of the same species should be seasoned in the same stack
- This method will reduce moisture content to between 18% – 22% and reach equilibrium with the surrounding air
- It is a relatively cheap method of seasoning timber as no electrical energy is used in this method
- It is a slow method of drying wood and the rate of seasoning cannot be controlled



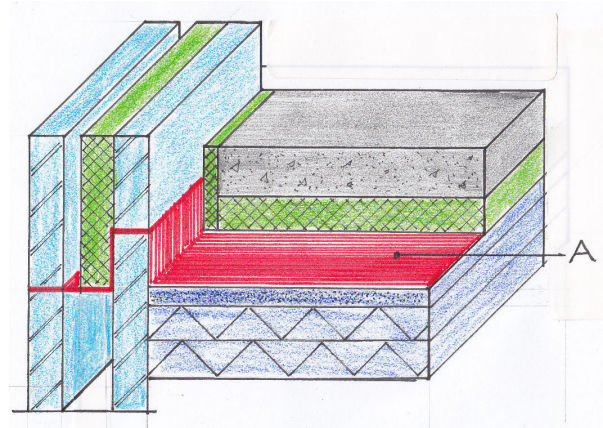
Concrete lintel – such as

- This is a reinforced concrete beam
- The lintel spans the opening over a door or window
- The lintel carries the weight of the blockwork or brickwork resting above
- Concrete lintels may be cast in situ or pre-stressed
- Pre-stressed lintels are widely used in the construction industry
- The length of a lintel depends on the width of the opening and on the imposed loads
- Pre-stressed lintels are available in a range of lengths and widths.
- It transfers the load from above the door or window to the wall at either side.



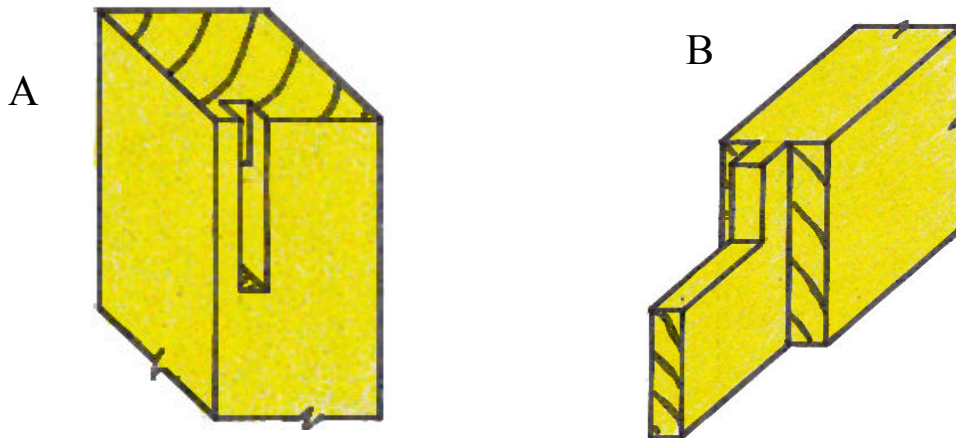
Radon barrier – such as

- A radon barrier **A** is a flexible membrane placed under the floor and extended through the external walls
- A radon barrier prevents the penetration of radon gas into the building
- It is fitted over the whole floor area of the house or building
- The radon barrier is a complete unbroken layer, all joints taped and sealed
- The barrier is installed by specialist companies
- Care must be taken not to damage the barrier during the construction work
- The barrier must be sealed and taped carefully around all service pipes
- The radon barrier replaces the damp proof membrane - DPM
- The radon barrier is usually placed over the sand blinding and beneath the insulation layer
- The sand blinding prevents damage to the radon barrier
- The radon barrier should be installed by trained personnel.
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Ceist 9 - Part (a)

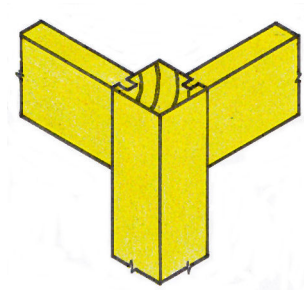
Suitable joint for attaching one of the rails to the leg of the table – such as



Suitable joint for attaching one of the rails to the leg of the table – Notes

- A suitable joint is a Mortise and Tenon joint
- It is made by removing a mortise from the top of the leg A
- The end of the rail B is cut and shaped to fit into the mortise
- The mortised area has a section removed to accept the haunch
- The haunch is formed as part of the tenon
- The haunch prevents the rail from twisting
- The haunch also increases the gluing surface.

Any other suitable joint



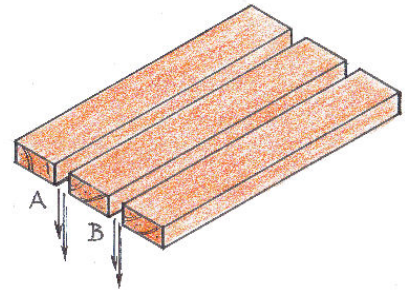
Reason for choosing this joint – such as

- It is strong and sturdy and has a large glue contact area
- The joint is suitable for outdoor, use waterproof glue to give good adhesion.

Part (b)

Two design features that make the table suitable for outside use – such as

- There is an expansion space between each strip of wood
- This allows water to drip off easily at A and B and allows the boards to expand and contract easily
- The table is made of solid wood
- With maintenance, it will withstand the elements
- The parts of the table are sturdy and strong
- This makes it suitable for outdoor use
- The top boards cover the end grain of the legs, preventing the end grain from absorbing moisture
- The spacing of all members makes it easy for future maintenance.



Part (c)

Suitable applied finish for the table – such as

A suitable finish is one of the following

- Paint finish
- Danish oil / tung oils, other oils
- Water based varnishes, paints and preservatives
- Teak oil
- Any other suitable finish.

Steps involved in preparing the wood and in applying the recommended finish to the table top

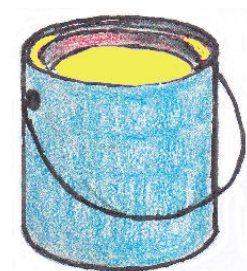
Applying a paint finish – such as

- Clean and sand the surface to be painted
- Remove the fine dust using white spirits
- Apply a suitable primer
- Sand the surface with a fine glass paper
- Apply a suitable undercoat
- Sand the surface and clean off the fine dust
- Apply two coats of the final finish
- Water-based paint is recommended as a finish.



Applying a varnish or stain finish – such as

- The surface is sanded and cleaned
- The surface may be cleaned using white spirits
- The varnish/stain is applied using a brush or cloth
- Apply two or three coats
- Sand between coats
- The finish may also be applied using a spray gun.



Applying Teak oil or Danish oil finish – such as

- The surface is cleaned and sanded
- The oil may be applied using brush or clean lint free cloth
- Sand between coats
- A number of coats must be applied
- Oil may be applied as required over the years.

Any other suitable finish

Question 1 – Section through one half of the roof of the porch		
Details - typical sizes		Marks
Part (a)		
Ridge board 250 mm × 35 mm		4
Concrete tiles		4
Softwood battens - typical 44 mm × 35 mm		4
Breather membrane overlapped and taped		4
Rafters 200 mm × 40 mm		4
Roof insulation to comply with current Building Regulations		4
Ceiling joist 200 mm × 40 mm		4
Insulated plasterboard with skim coat		4
100 mm × 75 mm wallplate		4
Internal plaster		4
Concrete block inner leaf – 100 mm		4
Full-fill insulated cavity 200 mm		4
Concrete block outer leaf – 100 mm		4
External plaster		4
Soffit 12 mm and fascia 25 mm		4
Eaves gutter 100 mm		4
<i>Any 9 of the above details (4 marks each)</i>	Sub-total	36
Four typical dimensions		4
Part (b)		
Shown on drawing a method to secure the wallplate to the external wall		
Stainless steel strap fixed to wall and wallplate – shown on drawing		2
Draughting, accuracy and scale	<i>(excellent, good, fair)</i>	8
	8 6 4	
	Total	50 marks

Question 2 – External wall insulation	
Details	Marks
Part (a)	
Filling the cavity with insulation – Notes	
Valid description one	4
Valid description two	4
Valid description three	4
Filling the cavity with insulation – Sketches	
Quality of sketches <i>(excellent, good, fair)</i>	8
	8 6 4
Adding an external system of insulation to the wall – Notes	
Valid description one	4
Valid description two	4
Valid description three	4
Adding an external system of insulation to the wall – Sketches	
Quality of sketches <i>(excellent, good, fair)</i>	8
	8 6 4
Part (b)	
Two advantages of insulating the external walls of the house	
Advantage one	5
Advantage two	5
Total	50 marks

Question 3 – Hot and cold water to mixer shower and cold water to toilet cistern			
Details – typical dimensions			Marks
Part (a)			
Rising mains			4
Cold water storage tank			4
Overflow			4
Cold supply to hot water cylinder			4
Hot water cylinder			4
Expansion pipe from cylinder			4
Hot water supply to mixer shower			4
Cold water supply to mixer shower			4
Cold water supply to toilet cistern			4
Valves			4
Insulation to water storage tank and pipework			4
Labelling			4
<i>Any 8 of the above details (4 marks each)</i>	Sub-total		32
Quality of sketch	<i>(excellent, good, fair)</i>		8
	<i>8</i>	<i>6</i>	<i>4</i>
Part (b)			
Two methods to reduce the use of water in a bathroom			
Method one – Notes and sketches			5
Method two – Notes and sketches			5
	Total		50 marks

Question 4 – Site entrance, driveway, septic tank and percolation area		
Details – typical dimensions		Marks
Part (a)		
Freehand sketch of given site showing the position of entrance, driveway, septic tank and percolation area - Sketch		
Site outline and house		3
Entrance		3
Driveway		3
Septic tank and percolation area		3
Quality of sketch	<i>(excellent, good, fair)</i> 8 6 4	8
Part (b)		
Reason for preferred location - Notes		
Entrance		
Reason for preferred location		4
Driveway		
Reason for preferred location		4
Septic tank and percolation area		
Reason for preferred location - Notes		4
Part (c)		
Two suitable types of tree		
Tree type one		2
Tree type two		2
Show where you would plant the trees on the site - Sketch		
Quality of sketch	<i>(excellent, good, fair)</i> 8 6 4	8
Two advantages of the recommended trees on the site		
Advantage one		3
Advantage two		3
	Total	50 marks

Question 5 – Scale drawing through foundation, external wall and concrete floor		
Details - typical dimensions	Marks	
Part (a)		
External render – 19 mm	5	
Concrete block outer leaf - 100 mm	5	
50 mm ventilated cavity	5	
Breather membrane and racking board, OSB/Plywood	5	
200 mm timber stud	5	
12.5 mm plasterboard	5	
Skirting board	5	
Concrete slab and 20 mm quarry tiles	5	
Floor insulation, 200 – 300 mm, with vertical insulation	5	
Radon barrier/DPM and Damp proof course (DPC)	5	
Hardcore and sand blinding	5	
Cavity fill and concrete insulation blocks	5	
Reinforced concrete foundation	5	
Footpath and hardcore	5	
<i>Any 7 of the above details (5 marks each)</i>	Sub-total	35
Four typical dimensions	4	
Part (b)		
Position of the insulation in the wall and floor		
Wall and floor insulation	3	
Draughting, accuracy and scale	<i>(excellent, good, fair)</i>	8
	8 6 4	
	Total	50 marks

Question 6 - Safety

Details	Marks
Part (a)	
Safety signs - Sketches	
Hand protection	
Quality of sketch <i>(excellent good fair)</i>	8
	8 6 4
Ear protection	
Quality of sketch <i>(excellent good fair)</i>	8
	8 6 4
Eye protection	
Quality of sketch <i>(excellent good fair)</i>	8
	8 6 4
Part (b)	
One specific activity where the personal protective equipment should be worn on a construction site	
Hand protection	4
Ear protection	4
Eye protection	4
Part (c)	
Two activities in the Construction Studies room where it is recommended that the personal protective equipment should be worn	
Activity one	7
Activity two	7
Total	50 marks

Question 7 – Using a water butt to collect rainwater	
Details	Marks
Part (a)	
Water butt - pipework necessary to collect and store rainwater from the roof - Notes	
Valid detail one	6
Valid detail two	6
Water butt - pipework necessary to collect rainwater from the roof and store it - Sketches	
Quality of sketches	<i>(excellent good fair)</i> 8 6 4
Part (b)	
Two advantages of using a water butt to store rainwater - Notes	
Advantage one	5
Advantage two	5
Two disadvantages of using a water butt to store rainwater - Notes	
Disadvantage one	5
Disadvantage two	5
Part (c)	
Two reasons why it is advisable to harvest rainwater - Notes	
Reason one	5
Reason two	5
Total	50 marks

Question 8 - Terms	
Details	Marks
Item one	
Primary communication of relevant information	6
Other communication of relevant information	4
Item two	
Primary communication of relevant information	6
Other communication of relevant information	4
Item three	
Primary communication of relevant information	6
Other communication of relevant information	4
Item four	
Primary communication of relevant information	6
Other communication of relevant information	4
Item five	
Primary communication of relevant information	6
Other communication of relevant information	4
Total	50 marks

Question 9 – Wooden table for outdoor use		
Details		Marks
Part (a)		
Suitable joint for attaching a rail to a leg of the table - Notes		
Suitable joint		4
Valid reason		4
Suitable joint for attaching a rail to a leg of the table - Sketches		
Quality of sketch	<i>(excellent good fair)</i> 8 6 4	8
Part (b)		
Two design features that make the table suitable for outside use - Notes		
Design feature one		4
Design feature two		4
Two design features that make the table suitable for outside use - Sketches		
Quality of sketches	<i>(excellent good fair)</i> 8 6 4	8
Part (c)		
Recommend a suitable finish for the table		
Recommended finish		4
Preparing the wood and applying the recommended finish to tabletop - Notes		
Valid detail one		5
Valid detail two		5
Preparing the wood and applying the recommended finish to tabletop - Sketches		
Quality of sketches	<i>(excellent good fair)</i> 4 3 2	4
Total		50 marks

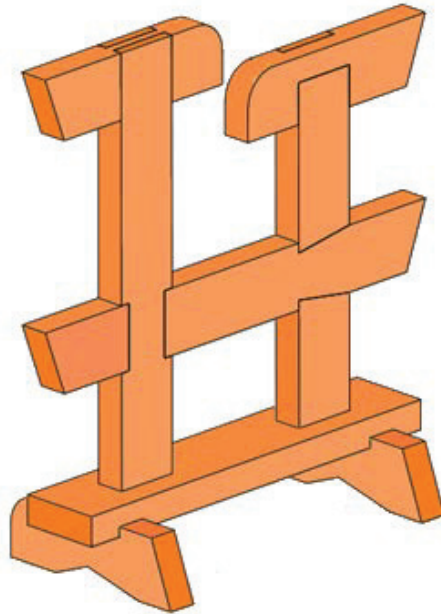
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Coimisiún na Scrúduithe Stáit
State Examinations Commission

Scrúdú na hArdteistiméireachta 2015
Leaving Certificate Examination 2015

Scéim Mharcála
Marking Scheme
(150 marc)



Staidéar Foirgníochta
Triail Phraticiúil

Construction Studies
Practical Test

Construction Studies 2015

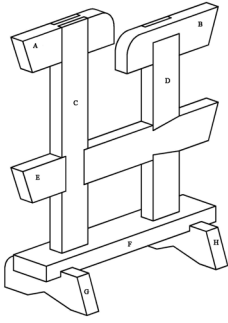
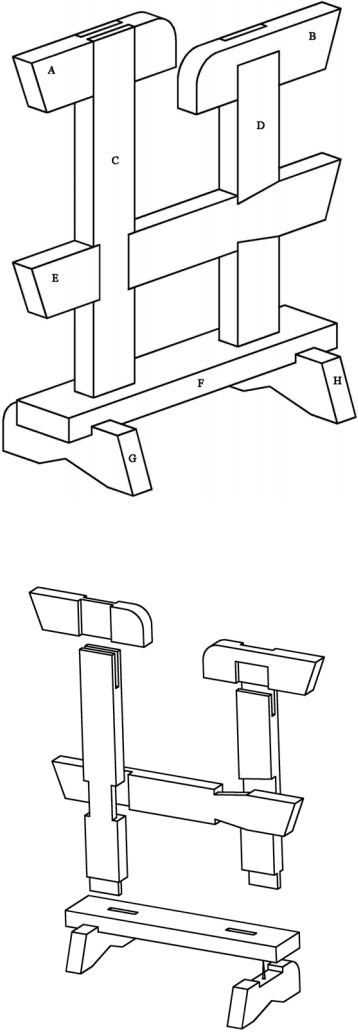
Marking Scheme – Practical Test

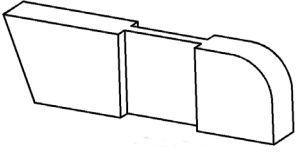
Note:

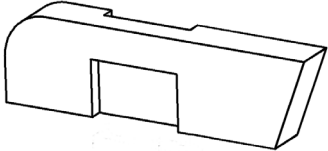
The artefact is to be hand produced by candidates without the assistance of machinery. However the use of a battery powered screwdriver is allowed.


Where there is evidence of the use of machinery for a particular procedure a penalty applies.

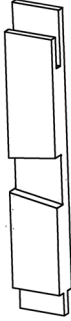
Component is marked out of 50% of the marks available for that procedure.

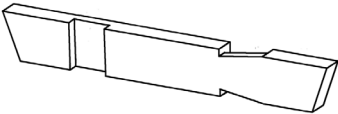
	(i)	OVERALL ASSEMBLY	MARKS
	1	Overall quality of assembled artefact	10
	2	Design and applied shaping to edges <ul style="list-style-type: none"> • design <i>(3 marks)</i> • shaping <i>(3 marks)</i> 	6
	Total		16
	(ii)	MARKING OUT	Marks
	1	Piece A <ul style="list-style-type: none"> • Bridle joint <i>(2 marks)</i> • slope and curve <i>(2 × 1 mark)</i> 	4
	2	Piece B <ul style="list-style-type: none"> • Bridle joint <i>(3 marks)</i> • slope and curve <i>(2 × 1 mark)</i> 	5
	3	Piece C <ul style="list-style-type: none"> • Bridle joint <i>(2 marks)</i> • Halving joint <i>(3 marks)</i> • Tenon <i>(3 marks)</i> 	8
	4	Piece D <ul style="list-style-type: none"> • Bridle joint <i>(3 marks)</i> • Dovetail joint <i>(3 marks)</i> • Tenon <i>(3 marks)</i> 	9
	5	Piece E <ul style="list-style-type: none"> • Halving joint <i>(2 marks)</i> • Dovetail joint <i>(4 marks)</i> • Slopes <i>(2 × 1 mark)</i> 	8
	6	Piece F <ul style="list-style-type: none"> • joints - mortices <i>(2 × 2 marks)</i> 	4
	7	Piece G and H <ul style="list-style-type: none"> • trenches <i>(2 × 2 marks)</i> • slopes and curves <i>(8 × 1 mark)</i> 	12
Total		50	

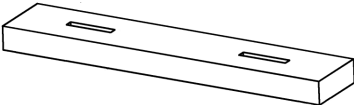
PIECE A	(iii)	PROCESSING	Marks
	1	Trenches <ul style="list-style-type: none"> sawing across the grain (4 × 1 mark) paring trench (2 × 1 mark) 	6
	2	Shaping <ul style="list-style-type: none"> sloped edge (1 mark) curve (1 mark) 	2
		Total	8

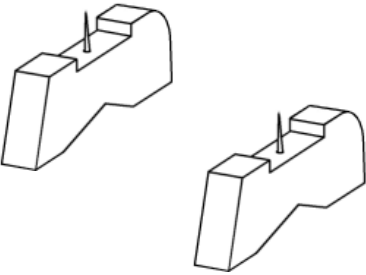
PIECE B	(iv)	PROCESSING	Marks
	1	Trench <ul style="list-style-type: none"> sawing across the grain (4 × 1 mark) paring trench on front (3 marks) paring trench on back (1 mark) 	8
	2	Shaping <ul style="list-style-type: none"> sloped edge (1 mark) curve (1 mark) 	2
		Total	10

PIECE C	(v)	PROCESSING	Marks
	1	Tenon <i>(5 marks)</i>	5
	2	Centre trenches <i>(3 × 2 marks)</i>	6
	3	Bridle joint <ul style="list-style-type: none"> sawing with grain (2 × 1 mark) paring trench (2 marks) 	4
		Total	15

PIECE D	(vi)	PROCESSING	Marks
	1	Tenon <i>(5 marks)</i>	5
	2	Dovetail halving <ul style="list-style-type: none"> sawing slopes <i>(2 × 1 mark)</i> paring trench <i>(1 mark)</i> 	3
	3	Bridge <ul style="list-style-type: none"> sawing with grain <i>(2 × 1 marks)</i> sawing across the grain <i>(1 mark)</i> paring trench <i>(2 marks)</i> 	5
		Total	13

PIECE E	(vii)	PROCESSING	Marks
	1	Halving joint <ul style="list-style-type: none"> sawing across grain <i>(2 × 1 mark)</i> paring trench <i>(1 mark)</i> 	3
	2	Dovetail halving <ul style="list-style-type: none"> sawing across grain <i>(4 × 1 mark)</i> shaping slopes <i>(2 × 2 marks)</i> paring trench <i>(1 mark)</i> 	9
	3	Shaping sloped ends <i>(2 × 1 mark)</i>	2
		Total	14

PIECE F	(viii)	PROCESSING	Marks
	1	Mortices <i>(2 × 3 marks)</i>	6
		Total	6

PIECES G and H	(ix)	PROCESSING	Marks
	1	Trenches <ul style="list-style-type: none"> sawing shoulders <i>(4 × 1 mark)</i> paring trench <i>(2 × 1 mark)</i> 	6
	2	Shaping slopes <i>(6 × 1 mark)</i> Shaping curves <i>(2 × 1 mark)</i>	8
	3	Drilling and countersinking screws <i>(2 × 2 marks)</i>	4
		Total	18

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