



Coimisiún na Scrúduithe Stáit  
State Examinations Commission

**LEAVING CERTIFICATE 2010**

**MARKING SCHEME**

**CONSTRUCTION STUDIES**

**ORDINARY LEVEL**

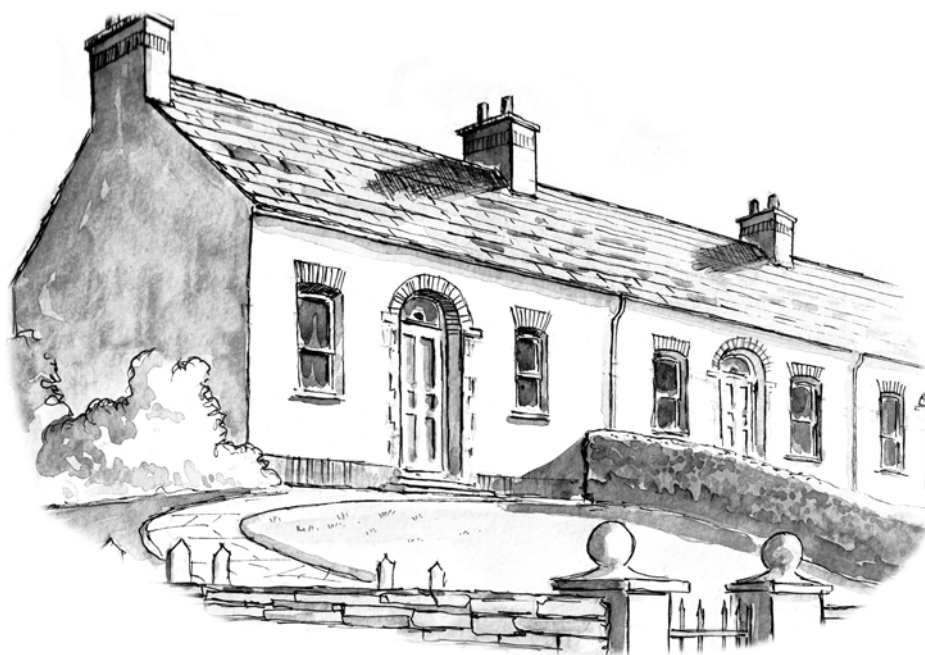




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*State Examinations Commission*

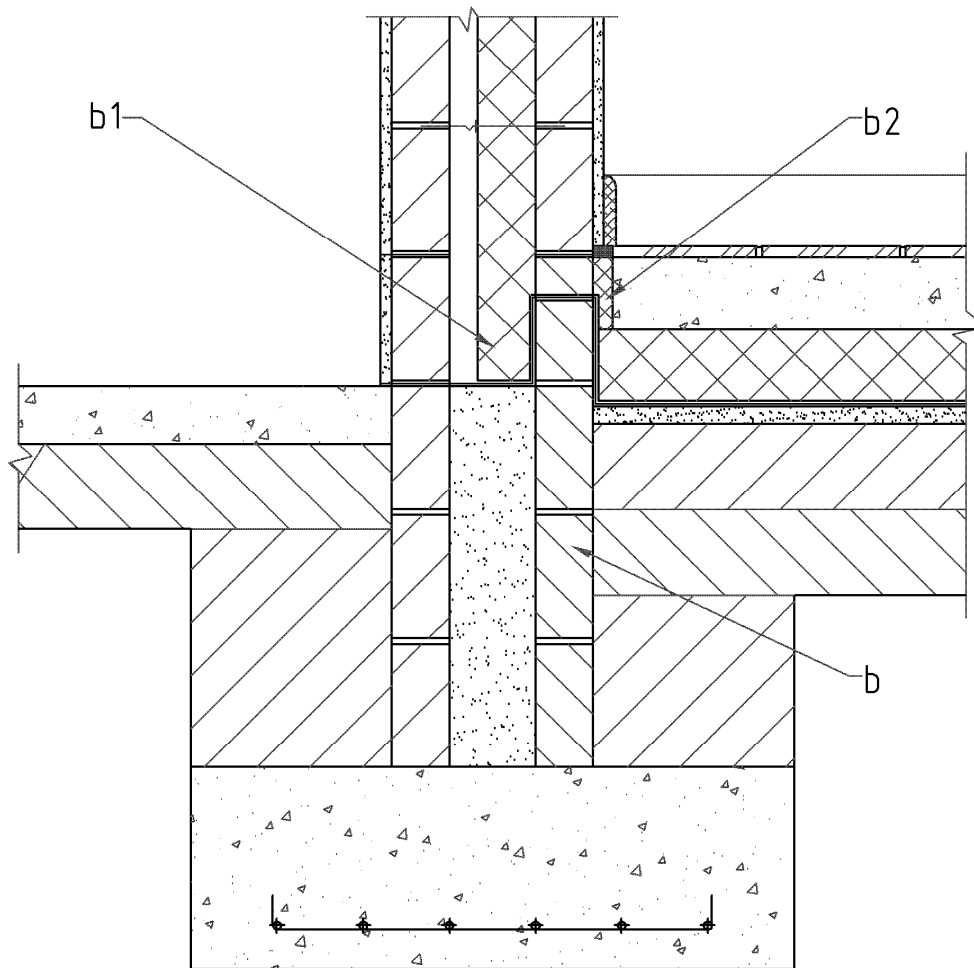
*Scrúdú Ardteistiméireachta 2010*

*Staidéar Foirgníochta*  
*Teoiric – Gnáthleibhéal*



*Construction Studies*  
*Theory – Ordinary Level*

**Ceist 1**  
**Part (a)**



**Specification**

- 100 mm concrete footpath/ground level
- 19 mm external render
- 100 mm concrete block outer leaf
- D.P.C
- 50 mm residual cavity
- Wall tie
- 100 mm HD thermal insulation
- 100mm concrete block inner leaf
- 13mm internal plaster
- Skirting board 120 x 20 mm
- 20 mm quarry tiles with seal between wall and floor
- 150 mm concrete floor
- 150 mm floor insulation
- Perimeter insulation
- D.P.M. /radon barrier
- Hardcore and sand blinding
- Inside leaf (b)-100 mm thermal blocks
- Concrete fill
- Reinforced concrete foundation

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

**Part (b)**

**Design detail to prevent a thermal/cold bridge at concrete floor and external wall**

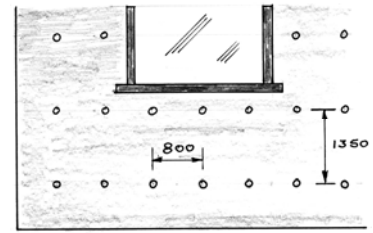
- Inner leaf built with thermal blocks k value - 0.20 W/m/K - from foundation to floor level- b
- Cavity insulation overlaps floor insulation - b1
- Insert perimeter insulation at floor level - b2
- Flexible seal between wall and floor

## Ceist 2

### Part (a)

#### Injecting insulation into the cavity

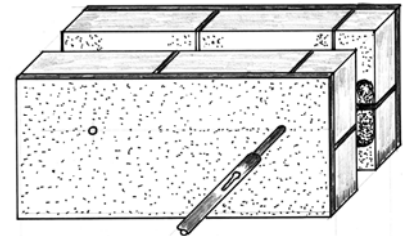
- This operation is carried out by specialist companies registered with SEAI and specialise in insulation of houses.
- Holes of 22mm diameter are drilled through the external leaf
- These holes are spaced at 800mm horizontally and at 1350mm vertically
- Extra holes are drilled beneath window cills and above window and door heads. This is to ensure proper filling of the cavity
- The insulation in the form of polystyrene bead is then pumped into the cavity
- As the pumping takes place a light coating of strong glue is applied to the beads
- When the glue sets the beads will form a solid structure
- When the pumping is complete the holes are filled and blended in with the external finish.



### Part (b)

#### Advantages of injecting insulation into cavity

- Reduces the heat loss through walls
- The house will be warmer and energy bills are reduced
- Higher U-value
- No interference with the internal surface of the walls, radiators, sockets etc.
- The floor area remains the same
- It is an economical method of improving insulation of an existing wall.



#### Disadvantages of injecting insulation into cavity

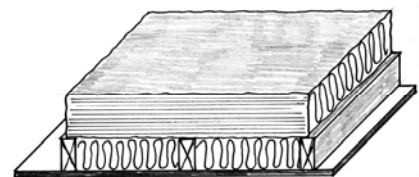
- The cavity is bridged and this may cause problems in exposed sites
- Damp may travel across the filled cavity
- The marks of the holes are visible on the external walls
- The beads may not fill the cavity completely

### Part (c)

#### The attic of this house may be insulated as follows

##### Insulation quilt

- Placing quilt - fibre glass between and over the joists
- 100mm is placed between the joists
- 200 - 300mm is then place at right angles and on top of the joists
- A vapour barrier should be placed on the warm side of the insulation
- The attic should be ventilated above the insulation
- Other quilt types that may be used are: sheep wool, rockwool, cork board



##### Blown insulation

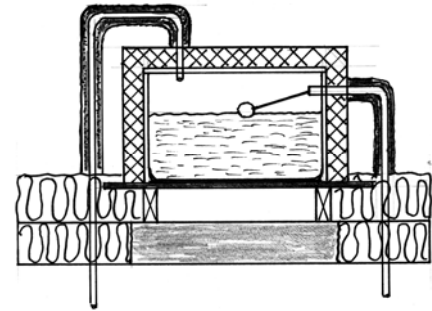
- This is where the insulation is blown into the attic space
- A specialist contractor is required to carry out this operation
- The materials used are shredded glass fibre, mineral fibre or cellulose fibre

### Rigid insulation

- Expanded polystyrene board may be used
- Extruded polystyrene board may be used
- Mineral fibre – rockwool - batts
- Sheet cork

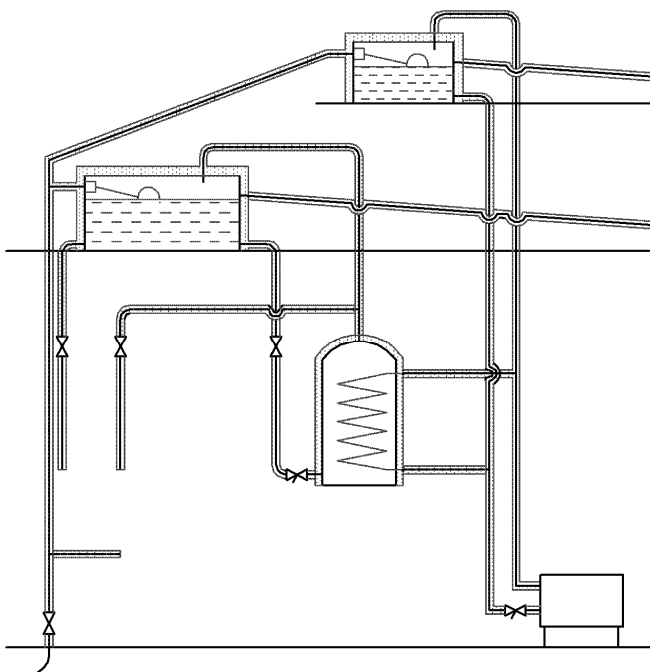
### The water storage tank

- The tank is insulated on the sides and on top
- Insulation is not placed under the tank
- Rigid insulation is usually used in this situation – e.g. polystyrene board of thickness 65 mm – 100 mm is used
- The pipes are also insulated in pipe section form



### Ceist 3

#### Part (a)



- 15 mm water supply to expansion tank
- Insulated expansion tank with ballvalve

#### Secondary circulation

- 15 mm rising main with stop cock
- Insulated storage tank and ballvalve
- 22 mm min overflow
- 22 mm cold feed with insulation from storage tank to indirect hot water cylinder
- Control valve
- Drain off valve
- Insulated indirect hot water cylinder
- 22 mm expansion pipe with insulation from indirect hot water cylinder
- 22 mm hot water supply

#### Primary circulation

- 22 mm overflow min
- 22 mm cold feed with insulation from expansion tank
- 28 mm primary return typical
- Drain off valve
- Wood burning stove
- 28 mm primary flow typical
- 22 mm expansion pipe with insulation

#### Part (b)

#### Advantages of using wood burning stoves to heat domestic hot water

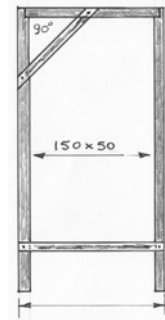
- Wood is renewable and less expensive
- Modern wood burning stoves are highly efficient
- Stoves are designed to heat domestic hot water
- Trees will almost re-absorb as much CO<sub>2</sub> released by burning wood
- Wood burning stoves can supplement other forms of central heating
- The world supply of fossil fuels is dwindling making wood burning stoves a viable option
- Wood logs are essentially made from waste wood - inexpensive, recycled, carbon neutral
- Homes with wood burning stoves feel warm and inviting.
- Grow your own wood, fast growing species e.g. willow

## Ceist 4

### Part (a)

#### Ensuring that the doorframe is assembled square prior to fitting the door

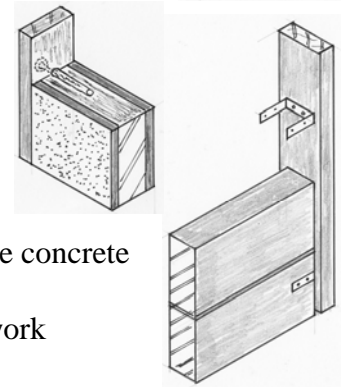
- The frame has three parts, two jambs and the head
- The top is joined to the two jambs using a rebated butt joint
- The head is fitted to the jambs and nailed /screwed together
- One corner is checked for square using a large steel square
- Then a brace piece is fixed at that corner within the rebate
- A cross piece is fitted at the bottom to secure the correct width



### Part (b)

#### The door frame is fitted as follows

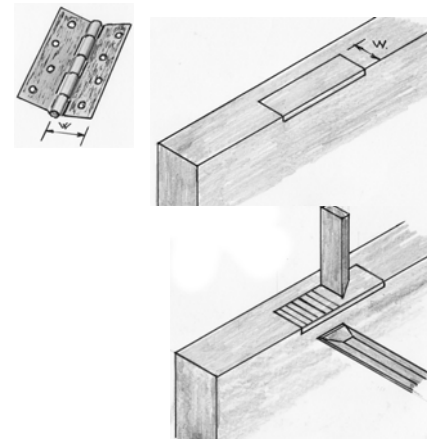
- The door frame is placed in the opening
- The jambs are fitted plumb with the brace and spacer holding it square
- The frame is fitted up against the lintel
- Small wedges may be used to firm the frame in position
- Special fixing screws, rawl bolts/ anchor fixings to fix the frame to the concrete block wall
- Special fixing brackets may also be used to fit the frame to the blockwork



### Part (c)

#### Fitting the hinge

- A butt hinge is normally used for this door
- The position of the hinge is marked on the door edge
- Two lines are marked to show the ends of the hinge
- The width of the hinge is used to set the marking gauge
- The gauge is also used to mark the thickness of the hinge leaf
- A sharp bevel edged chisel is used to remove the waste
- Router with jig is often used
- The trench is slightly sloped on the outer edge



## Ceist 5

### Part (a)

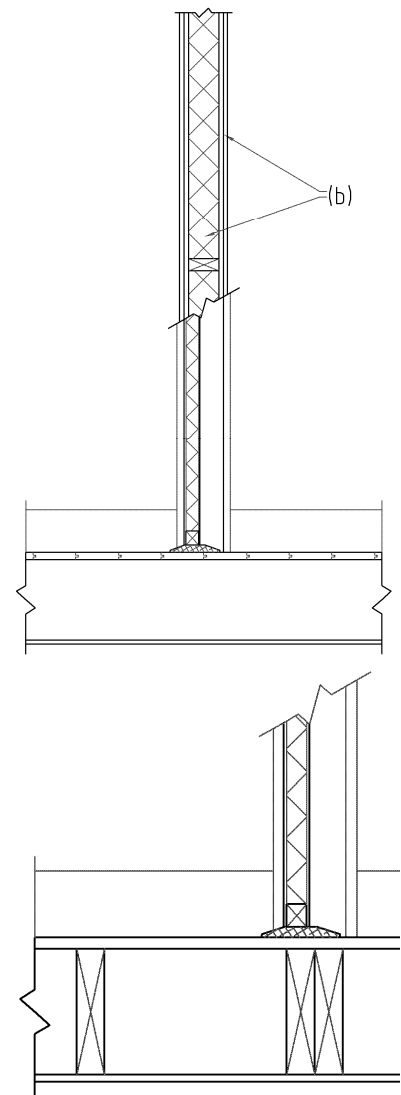
#### Specification

- Plasterboard ceiling
- 225 x 50 mm ceiling joists
- Tongued and grooved floor
- Typical 15 mm door saddle
- Typical 120 x 20 mm skirting board
- Typical 70 x 20 mm architrave
- Standard flush internal door
- Typical 110 x 44 mm door frame
- Typical 70 x 20 mm architrave
- Typical 120 x 20 mm skirting board

### Part (b)

#### Method that will help reduce the transmittance of sound through the stud partition

- Fitting rigid, semi-rigid or flexible mineral wool between studs
- Using acoustic sealing tape between the stud partition and surrounding walls
- Fitting acoustic plasterboard to the partition
- Fixing double plasterboard slabs on each side, joints staggered
- Fitting barrier mats / grommets around openings for pipes
- Constructing a double stud partition wall with acoustic quilt fitted between the studs
- Using any other proprietary sound proofing material



## Ceist 6

### Part (a)

#### Safety - painting of an external wall

- Visually check to ensure the ladder is in good condition
- Ensure the ladder is on firm level ground
- The ladder should be placed at 1:4 angle
- Do not over reach from a ladder
- Maintain three points of contact
- Ensure the ladder is not in way of traffic
- Area guarded by cones around ladder
- Secure the ladder and have the help of another person to hold ladder

#### Reasons

- Safety depends on the condition of the ladder
- The angle is important - too steep or too flat dangerous
- Overreaching is very dangerous
- The user must be aware of people and traffic
- Two feet on same step and belt buckle inside the rails prevents overreaching

#### Safety precautions to be observed when using a veneering knife

- Use a good quality sharp knife
- Place the veneer on a solid sound firm surface



- Use an edge to guide the knife
- Run the knife lightly and pass over the cut several times
- Keep firm pressure on the straight edge
- Concentrate on the work being carried out
- Watch out for slippage of the knife

**Reasons**

- Veneer cutting is safer on a solid surface
- A sharp knife is easier and safer to use
- Good straight edge keeps the knife on the correct cut
- Concentration is always important

**Safety precautions to be observed when using jig saw to cut a wooden panel**

- Ensure the wood is firmly clamped to a solid surface
- Ensure the lead is well clear of the cutting blade
- Cut slowly and carefully especially at the start of the cut
- Only one person at workpiece
- Concentrate on the work being carried out
- Use correct eye/face protection

**Reasons**

- It is dangerous for the user if the wood moves about
- If the lead touches the blade it is dangerous
- Cutting slowly and concentrating helps the safety
- Mask ensures dust is not being inhaled
- Eye protection ensure no particles getting into the eyes

**Part (b)**

**Safety when using electrical tools out-of-doors**

**Dry conditions**

- Ensure the work is being carried out in dry conditions
- Use double insulated tools
- Electricity and water very dangerous.



**Electrical Leads**

- Make sure the leads are in good condition.
- Damaged leads are very dangerous and should never be used
- Ensure that all connections are in good condition as faulty connections lead to accidents

**Voltage**

- Use 110 volt powered equipment out - of - doors

**Eye protection**

- Use correct eye/face protection as appropriate
- Important that eyes are protected
- Dust is harmful to the respiratory system
- Concentration is important



## Ceist 7

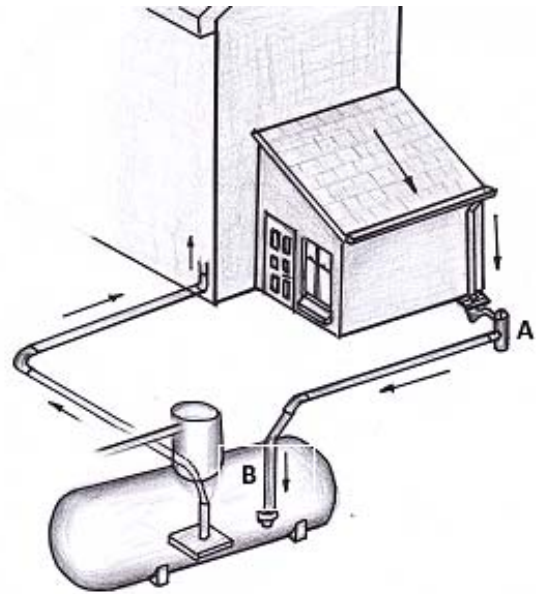
### Part (a)

#### Collection and discharge of rainwater –

- Eaves gutter 125 mm typical
- Downpipe 65 mm typical

#### Collection and discharge of rainwater -

- Rainwater is collected into gutter from sloping roof
- Stopends prevent rainwater from flowing over the ends of the gutter
- Rainwater runs into the downpipe through outlets in the gutter
- Rainwater flows down the downpipe to the gully or back inlet gully



### Part (b)

#### Conveyance of rainwater from gully trap to storage tank – see sketch

- Underground piping
- Filter at A or B in diagram
- Storage tank with overflow to sump
- Submersible pump in tank with cleaning access

#### Description

- Rainwater flows from gully trap to underground piping
- Filter between gully trap and storage tank traps sediment
- Filter can be accessed from top for maintenance/cleaning
- Filtered water flows into storage tank
- Tank contains rainwater which can be re-used as grey water only
- Submersible pump pumps water back to the house

### Part (c)

#### Advantages of storing rainwater

- Helps reduce domestic water consumption
- Rainwater is less damaging on appliances and reduces the amount of detergents required for washing
- Reduces the volume of surface water going into drains and reduces the risk of flooding
- Reduces wastage of expensive chlorinated drinking water
- Raises awareness of climate change and water shortage

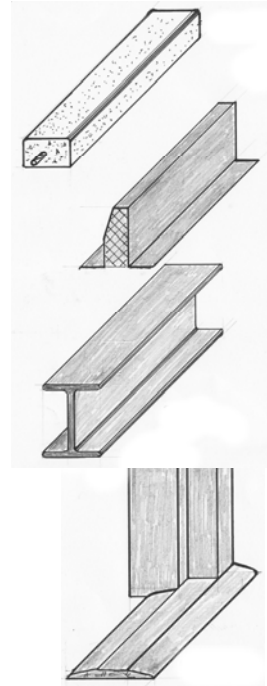
#### Uses for stored rainwater

- Ideal for watering vegetables gardens, plants, flowers etc. – no chlorine
- Used for washing machines, toilets and household tasks
- Used for outdoor cleaning e.g. power washing, car washing

## Ceist 8

### Concrete lintel

- This is a reinforced concrete beam
- Pre-stressed concrete lintels are widely used in construction
- The lintel spans the opening over a window or door
- It transfers the load from above the door or window to the wall at either side
- The lintel carries the weight of the blockwork or brickwork
- The length of a lintel depends on the width of opening
- Special steel lintels and RSJ may also used

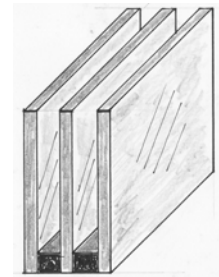


### Door saddle

- This is made of hardwood or softwood of typical section 110 x 15
- It is fixed at the bottom of the door frame
- The saddle is cut and shaped to fit neatly around the frame
- It gives clearance between floor and the bottom of the door
- It forms a neat finish to the space under the door
- The door saddle may be made of hardwood or softwood
- The saddle also covers the joint between two different floor coverings

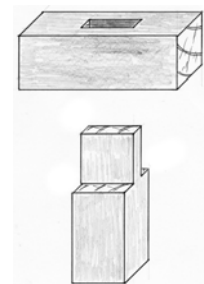
### Triple glazing

- With triple glazing three layers of glass are used
- By using three layers the panel is a better insulator, better acoustic performance
- Triple glazing improves the U-value of the window
- The third layer is designed to reduce heat loss and is ideal in exposed sites
- It helps provide a comfortable indoor temperature
- There is less condensation when triple glazing is used



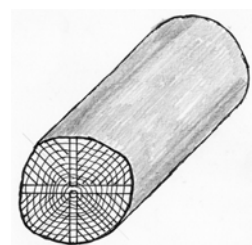
### Mortice and tenon joint

- It is widely used in the manufacture of furniture, doors and windows
- A mortice is formed in one piece
- A tenon is cut and formed on the other piece
- The tenon fits neatly into the mortice
- The ideal proportion for the tenon is one third of the thickness



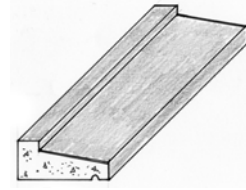
### Quarter sawing

- This is a method used to convert logs into suitable sizes
- The sawing is carried out by cutting in line or parallel to the rays
- It is also referred to as radial sawing
- This method of conversion produces an attractive grain pattern especially in oak. This is called silver grain.
- The boards are stable and wear evenly
- This is an expensive method of conversion
- It is labour intensive as the log has to be rotated for each cut



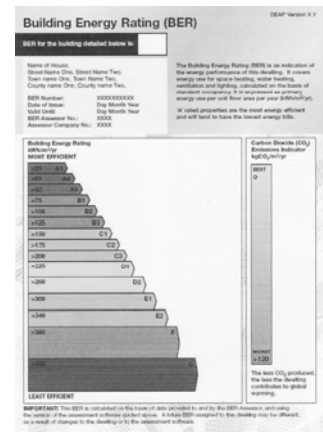
## Window cill

- Generally this is a reinforced concrete unit fitted under the window, can be stainless steel
- The cill may support the window
- The surface of the cill slopes downwards from the window to carry the rainwater away from the window and wall
- A drip is formed on the underside of the cill to prevent water getting back to the wall
- The length of window cills varies to suit the opening
- A window cill may also be made of PVC, stone or wood



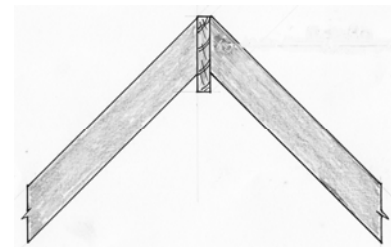
## Energy rating

- This is an indication of the energy performance of a house
- It also takes into account CO<sub>2</sub> emissions associated with the dwelling energy use
- It takes into account all components of the building
- It is generally referred to as the BER of a dwelling. BER is Building Energy Rating
- A BER makes the energy performance of a home visible to the purchaser
- It is similar to the energy label on a fridge with a scale of A-G
- An energy rating of A is the most efficient and G is the least efficient
- A BER has to be provided when houses are sold or rented and is compulsory since January 1<sup>st</sup> 2009



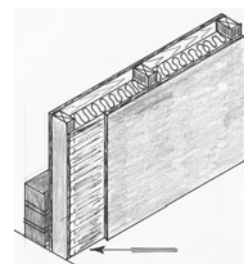
## Ridge board

- The ridge board is a horizontal member fitted between the top ends of the rafters
- It forms the apex of the roof
- The ridge board gives rigidity and straightness to the roof
- Opposite rafters are nailed to it
- The ridge board is generally made of softwood



## Vapour barrier

- This is a continuous membrane placed on the warm side of insulation
- It slows the diffusion of water vapour into the insulation - the 5: 1 rule
- It is used in timber frame external walls
- It is used in flat roof construction
- It is used in pitch roof attic development
- The vapour barrier is part of insulated plasterboard



## Ceist 9

### Part (a)

#### Repair rather than replace wooden windows

- Conserve existing wooden frames for environmental reasons
- Retain original features / style / character / workmanship
- Modern windows may not suit the building
- Reduce costs, sustainable
- Repairing is a much less disruptive process

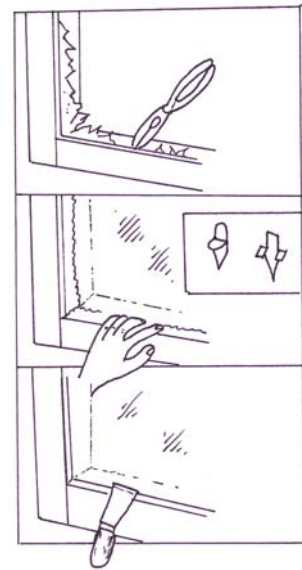
### Part (b)

#### Components - see sketch

- Window frame / rebate
- Broken glass
- Scraping out rebate
- Tool removing / replacing glazing pins / fasteners
- Installing new glass
- Application of new glazing compound, mastics

#### Description

- Removal of broken glass and pins/ fasteners from rebate
- Cleaning / sanding of rebate
- Application of primer to rebate to prevent absorption of oils
- Application of glazing compound into rebate to act as a settling bed
- Insert glass and install glazing pins / fasteners
- Apply glazing compound to perimeter – bevelled
- Shape or trim off any excess compound



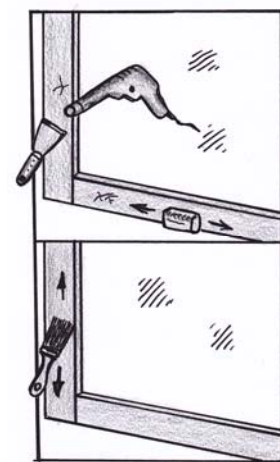
### Part (c)

#### Components – see sketch

- Floor beneath window protected with cloth
- Use of sandpaper, scraper, chemical stripper or heat gun
- Taping over hinges, catches and glass perimeter
- Application of primer, undercoat and final coats

#### Description

- Protect floor underneath window with cloth
- Use sandpaper, scraper, chemical stripper or heat gun to remove old paint
- Ensure all surfaces are clean and dry prior to painting
- Use masking tape to protect hinges, catches and glass from paint
- Apply primer and / or undercoat with brush
- Apply final coat(s) with paint brush
- Apply brush in the direction of the grain



<b>Question 1</b>		
<b>Details</b>		<b>Marks</b>
<b>Part (a)</b>		
19 mm external render and 13 mm internal plaster		<b>5</b>
100 mm concrete block outer leaf		<b>5</b>
D.P.C		<b>5</b>
50 mm residual cavity		<b>5</b>
Wall tie		<b>5</b>
100 mm thermal insulation		<b>5</b>
100mm concrete block inner leaf		<b>5</b>
Skirting board 120 x 20 mm		<b>5</b>
20 mm quarry tiles with seal between wall and floor		<b>5</b>
150 mm concrete floor		<b>5</b>
150 mm floor insulation		<b>5</b>
D.P.M. /radon barrier		<b>5</b>
Hardcore and sand blinding		<b>5</b>
Concrete fill / foundation blocks		<b>5</b>
Reinforced concrete foundation		<b>5</b>
<i>Any 7 of the above details (5 marks each)</i>	<b>Sub-total</b>	<b>35</b>
Any four typical dimensions		<b>4</b>
<b>Draughting, accuracy and scale</b>	<i>(excellent, good, fair)</i>	<b>8</b>
<b>Part (b)</b>		
<b>Show on drawing</b>		
Design detail to prevent a thermal/cold bridge at the junction of the concrete floor and the external wall		<b>3</b>
	<b>Total</b>	<b>50</b>
<i>Dimensions given are typical dimensions</i>		

<b>Question 2</b>	
<b>Details</b>	<b>Marks</b>
<i>Part (a)</i>	
<b>Injecting the insulation into the cavity - Notes</b>	
Valid description one	<b>4</b>
Valid description two	<b>4</b>
Type of insulation	<b>4</b>
<b>Injecting the insulation into the cavity - Sketch</b>	
Valid detail	<b>4</b>
<b>Quality of sketch</b> <span style="float: right;"><i>(excellent, good, fair)</i></span>	<b>5</b>
<i>Part (b)</i>	
<b>Injecting the insulation into the cavity</b>	
One advantage	<b>4</b>
One disadvantage	<b>4</b>
<i>Part (c)</i>	
<b>Insulating the attic and the water storage tank - Notes</b>	
Valid detail one	<b>4</b>
Valid detail two	<b>4</b>
<b>Insulating the attic and the water storage tank - Sketch</b>	
Type of insulation	<b>4</b>
Thickness of insulation	<b>4</b>
<b>Quality of sketch</b> <span style="float: right;"><i>(excellent, good, fair)</i></span>	<b>5</b>
<b>Total</b>	<b>50</b>

<b>Question 3</b>		
<b>Details</b>		<b>Marks</b>
<i>Part (a)</i>		
<b>Secondary circulation</b>		
15 mm rising main with stop valve		<b>4</b>
Insulated storage tank and ballvalve		<b>4</b>
22 mm overflow		<b>4</b>
22 mm cold feed with insulation from storage tank to hot water cylinder		<b>4</b>
Insulated indirect hot water cylinder		<b>4</b>
22 mm expansion pipe with insulation from indirect hot water cylinder		<b>4</b>
22 mm hot water supply		<b>4</b>
<b>Primary circulation</b>		
15 mm water supply to expansion tank		<b>4</b>
Insulated expansion tank with ballvalve		<b>4</b>
22 mm overflow		<b>4</b>
22 mm cold feed with insulation from expansion tank		<b>4</b>
28 mm primary return		<b>4</b>
Wood burning stove / back boiler		<b>4</b>
28 mm primary flow		<b>4</b>
22 mm expansion pipe with insulation		<b>4</b>
Valves		<b>4</b>
<i>Any 9 of the above details (4 marks each)</i>	<b>Sub-total</b>	<b>36</b>
<b>Quality of sketch</b>	<i>(excellent, good, fair)</i>	<b>6</b>
<i>Part (b)</i>		
<b>Advantages of using a wood burning stove</b>		
Advantage one		<b>4</b>
Advantage two		<b>4</b>
	<b>Total</b>	<b>50</b>



<b>Question 4</b>	
<b>Details</b>	<b>Marks</b>
<i>Part (a)</i>	
<b>Doorframe is assembled square prior to fitting the door - Notes</b>	
Valid description one	<b>3</b>
Valid description two	<b>3</b>
<b>Doorframe is assembled square prior to fitting the door - Sketch</b>	
Sketch	<b>4</b>
<b>Quality of sketch</b> <span style="float: right;"><i>(excellent, good, fair)</i></span>	<b>5</b>
<i>Part (b)</i>	
<b>Doorframe is fitted in the block wall - Notes</b>	
Valid description one	<b>3</b>
Valid description two	<b>3</b>
<b>Doorframe is fitted in the block wall - Sketch</b>	
Sketch	<b>4</b>
<b>Quality of sketch</b> <span style="float: right;"><i>(excellent, good, fair)</i></span>	<b>5</b>
<i>Part (c)</i>	
<b>Suitable hinge for the door - Sketch</b>	
<b>Quality of sketch</b> <span style="float: right;"><i>(excellent, good, fair)</i></span>	<b>5</b>
<b>Fitting hinge to the door - Notes</b>	
Valid detail one	<b>3</b>
Valid detail two	<b>3</b>
<b>Fitting hinge to the door - Sketch</b>	
Sketch	<b>4</b>
<b>Quality of sketch</b> <span style="float: right;"><i>(excellent, good, fair)</i></span>	<b>5</b>
<b>Total</b>	<b>50</b>

<b>Question 5</b>		
<b>Details</b>		<b>Marks</b>
<i>Part (a)</i>		
Plasterboard ceiling		<b>4</b>
225 x 50 mm ceiling joists		<b>4</b>
Tongued and grooved floor		<b>4</b>
Door saddle		<b>4</b>
120 x 20 mm skirting board		<b>4</b>
70 x 20 mm architrave		<b>4</b>
Internal door		<b>4</b>
110 x 44 mm door frame		<b>4</b>
70 x 20 mm architrave		<b>4</b>
120 x 20 mm skirting board		<b>4</b>
<i>Any 9 of the above details (4 marks each)</i>	<b>Sub-total</b>	<b>36</b>
<b>Draughting, accuracy and scale</b>	<i>(excellent, good, fair)</i>	<b>8</b>
<i>Part (b)</i>		
<b>Show on the drawing</b>		
Method that will help reduce the transmittance of sound through stud partition		<b>6</b>
	<b>Total</b>	<b>50</b>

<b>Question 6</b>	
<b>Details</b>	<b>Marks</b>
<i>Part (a)</i>	
<b>Safety precautions using a ladder when painting an external wall</b>	
Precaution one	<b>5</b>
Precaution two	<b>5</b>
Reasons	<b>4</b>
<b>Safety precautions when using a veneering knife to cut veneers</b>	
Precaution one	<b>5</b>
Precaution two	<b>5</b>
Reasons	<b>4</b>
<b>Safety precautions when using a jig saw to cut a wooden panel</b>	
Precaution one	<b>5</b>
Precaution two	<b>5</b>
Reasons	<b>4</b>
<i>Part (b)</i>	
<b>Safety precautions when using electrical tools out-of doors - Notes</b>	
Precaution one	<b>2</b>
Precaution two	<b>2</b>
<b>Safety precautions when using electrical tools out-of doors - Sketch</b>	
<b>Quality of sketch</b>	<i>(excellent, good, fair)</i> <b>4</b>
<b>Total</b>	<b>50</b>

<b>Question 7</b>	
<b>Details</b>	<b>Marks</b>
<i>Part (a)</i>	
<b>Collection and discharge of rainwater - Sketch</b>	
Eave gutter - typical 125 mm	<b>4</b>
Downpipe - typical 65 mm	<b>4</b>
<b>Quality of sketch</b> <span style="float: right;"><i>(excellent, good, fair)</i></span>	<b>5</b>
<b>Collection and discharge of rainwater - Notes</b>	
Valid description one	<b>4</b>
Valid description two	<b>4</b>
<i>Part (b)</i>	
<b>Conveyance of rainwater from gully trap to storage tank - Sketch</b>	
Storage tank and Underground piping	<b>4</b>
Filter	<b>4</b>
<b>Quality of sketch</b> <span style="float: right;"><i>(excellent, good, fair)</i></span>	<b>5</b>
<b>Conveyance of rainwater from gully trap to storage tank - Notes</b>	
Valid description one	<b>4</b>
Valid description two	<b>4</b>
<i>Part (c)</i>	
<b>Advantages of storing rainwater and uses of stored rainwater</b>	
Valid advantage and use one	<b>4</b>
Valid advantage and use two	<b>4</b>
<b>Total</b>	<b>50</b>

<b>Question 8</b>	
<b>Details</b>	<b>Marks</b>
<b>Item one</b>	
Primary communication of relevant information	<b>6</b>
Other communication of relevant information	<b>4</b>
<b>Item two</b>	
Primary communication of relevant information	<b>6</b>
Other communication of relevant information	<b>4</b>
<b>Item three</b>	
Primary communication of relevant information	<b>6</b>
Other communication of relevant information	<b>4</b>
<b>Item four</b>	
Primary communication of relevant information	<b>6</b>
Other communication of relevant information	<b>4</b>
<b>Item five</b>	
Primary communication of relevant information	<b>6</b>
Other communication of relevant information	<b>4</b>
<b>Total</b>	<b>50</b>

<b>Question 9</b>	
<b>Details</b>	<b>Marks</b>
<i>Part (a)</i>	
<b>Reasons for repairing rather than replacing wooden windows</b>	
Valid reason one	<b>4</b>
Valid reason two	<b>4</b>
<i>Part (b)</i>	
<b>Replacing broken pane of glass - Notes</b>	
Window frame / rebate Broken glass / Cleaning out rebate	<b>4</b>
Tool removing / replacing glazing pins / fasteners	<b>4</b>
Inserting new glass / Applying new glazing compound	<b>4</b>
<b>Replacing broken pane of glass - Sketch</b>	
Valid details	<b>4</b>
<b>Quality of sketch</b>	<i>(excellent, good, fair)</i> <b>5</b>
<i>Part (c)</i>	
<b>Repainting window frame - Notes</b>	
Removal of existing paint by sandpaper, scraper, chemical or heat gun	<b>4</b>
Preparation of surfaces by sanding, taping of hinges, catches, glass perimeter	<b>4</b>
Application of primer / undercoat / final coat	<b>4</b>
<b>Repainting window frame - Sketch</b>	
Valid details	<b>4</b>
<b>Quality of sketch</b>	<i>(excellent, good, fair)</i> <b>5</b>
<b>Total</b>	<b>50</b>



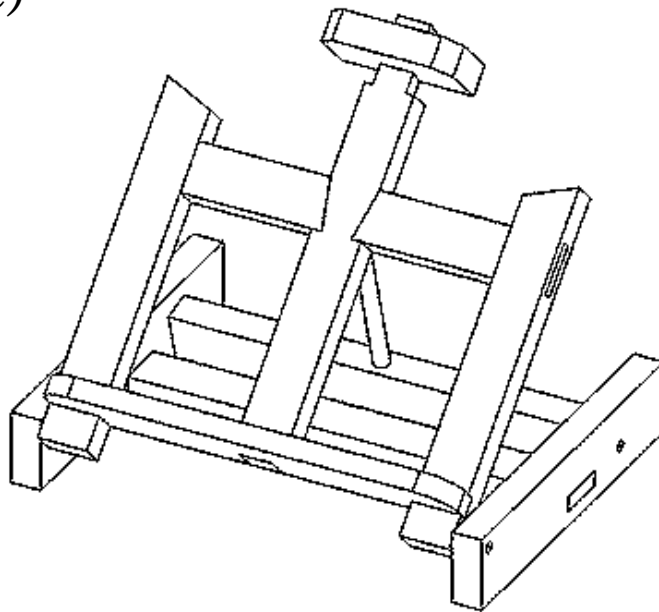
**Coimisiún na Scrúduithe Stáit**  
*State Examinations Commission*

*Scrúdú Ardteistiméireachta 2010*  
*Leaving Certificate Examination 2010*

# *Scéim Mharcála*

## *Marking Scheme*

*(150 marc)*



*Staidéar Foirgníochta*  
*Triail Phraiticiúil*

*Construction Studies*  
*Practical Test*

# Construction Studies 2010

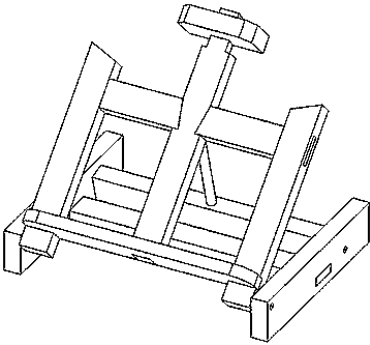
## Marking Scheme – Practical Test

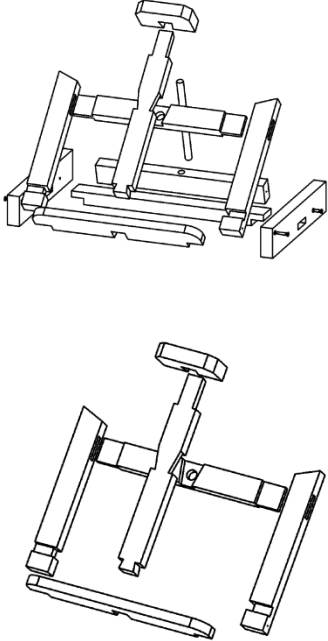
**Note:**

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

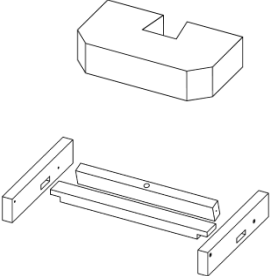
Where there is evidence of the use of machinery for a particular procedure a penalty applies.

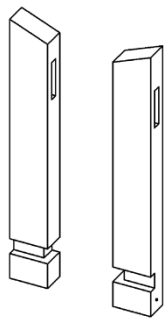
Component is marked out of 50% of the marks available for that procedure.


	<b>A</b>	<b>OVERALL ASSEMBLY</b>	<b>MARKS</b>
	1	Overall quality of assembled artifact	<b>8</b>
	2	Dowel located and fitted correctly	<b>3</b>
	3	Design and applied shaping in edges <ul style="list-style-type: none"> <li>• design</li> <li>• shaping</li> </ul> <div style="text-align: right;"><i>(2 x 2 marks)</i></div>	<b>4</b>
	<b>Total</b>		<b>15</b>

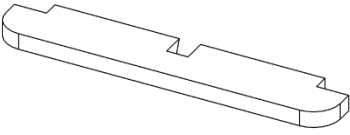
	<b>B</b>	<b>MARKING OUT</b>	<b>Marks</b>
	1	Left side - vertical <ul style="list-style-type: none"> <li>• joints - mortice <span style="float: right;"><i>(2 marks)</i></span></li> <li style="padding-left: 40px;">- housed <span style="float: right;"><i>(2 marks)</i></span></li> <li>• top slopes <span style="float: right;"><i>(1 mark)</i></span></li> </ul>	<b>5</b>
	2	Right side - vertical <ul style="list-style-type: none"> <li>• joints - mortice <span style="float: right;"><i>(2 marks)</i></span></li> <li style="padding-left: 40px;">- housed <span style="float: right;"><i>(2 marks)</i></span></li> <li>• top slopes <span style="float: right;"><i>(1 mark)</i></span></li> </ul>	<b>5</b>
	3	Middle - vertical <ul style="list-style-type: none"> <li>• joints - dovetail-bottom <span style="float: right;"><i>(2 marks)</i></span></li> <li style="padding-left: 40px;">- dovetail halving <span style="float: right;"><i>(4 marks)</i></span></li> <li style="padding-left: 40px;">- top dovetail <span style="float: right;"><i>(2 marks)</i></span></li> </ul>	<b>8</b>
	4	Bottom rail <ul style="list-style-type: none"> <li>• Joints - dovetail <span style="float: right;"><i>(2 marks)</i></span></li> <li style="padding-left: 40px;">- notches <span style="float: right;"><i>(2 x 2 marks)</i></span></li> <li>• quadrants <span style="float: right;"><i>(2 x 1 marks)</i></span></li> </ul>	<b>8</b>
	5	Top rail <ul style="list-style-type: none"> <li>• joints - tenons <span style="float: right;"><i>(2 x 2 marks)</i></span></li> <li style="padding-left: 40px;">- dovetail halving <span style="float: right;"><i>(4 marks)</i></span></li> </ul>	<b>8</b>

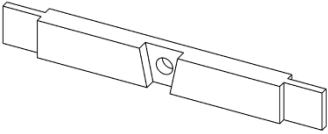


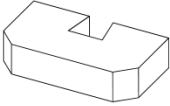
	6	<b>Top sliding</b> <ul style="list-style-type: none"> <li>dovetail pins</li> <li>chamfers</li> </ul>	<i>(2 marks)</i> <i>(2 x 1 mark)</i>	<b>4</b>
	7	<b>Base - left and right</b> <ul style="list-style-type: none"> <li>mortices</li> </ul>	<i>(2 x 2 marks)</i>	<b>4</b>
	8	<b>Base - middle rail</b> tenons	<i>(2 x 2 marks)</i>	<b>4</b>
			<b>Total</b>	<b>46</b>

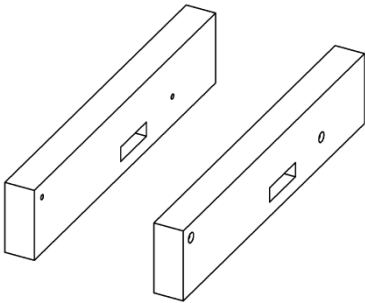
<b>TWO SIDES</b>	<b>C</b>	<b>PROCESSING</b>	<b>Marks</b>	
	1	Shaping sloped ends	<i>(2 x 1 mark)</i>	<b>2</b>
	2	Two mortices	<i>(2 x 3 marks)</i>	<b>6</b>
	3	Two housed joints	<i>(2 x 5 marks)</i>	<b>10</b>
			<b>Total</b>	<b>18</b>


<b>MIDDLE VERTICAL</b>	<b>D</b>	<b>PROCESSING</b>	<b>Marks</b>	
	1	<b>Dovetail - bottom</b> <ul style="list-style-type: none"> <li>Slopes</li> <li>Shoulders</li> </ul>	<i>(2x2 marks)</i> <i>(2x1 marks)</i>	<b>6</b>
	2	<b>Dovetail halving - centre</b> <ul style="list-style-type: none"> <li>Sawing across grain</li> <li>Shaping slopes</li> <li>Paring trench</li> </ul>	<i>(4 x 1 marks)</i> <i>(2 x 2 marks)</i> <i>(2 marks)</i>	<b>10</b>
	3	<b>Shaping top dovetail</b> <ul style="list-style-type: none"> <li>Sawing/ paring vertically</li> <li>Sawing shoulders</li> </ul>	<i>(2 x 2 marks)</i> <i>(2 x 1 marks)</i>	<b>6</b>
			<b>Total</b>	<b>22</b>

<b>BOTTOM RAIL</b>	<b>E</b>	<b>PROCESSING</b>	<b>Marks</b>
	1	Dovetail - centre	<b>3</b>
	2	Housed joint <ul style="list-style-type: none"> <li>• sawing <i>(4 x 1 mark)</i></li> </ul>	<b>4</b>
	3	Shaping curves <i>(2 x 2 marks)</i>	<b>4</b>
		<b>Total</b>	<b>11</b>

<b>TOP RAIL</b>	<b>F</b>	<b>PROCESSING</b>	<b>Marks</b>
	1	Two tenons <ul style="list-style-type: none"> <li>• sawing vertically <i>(4 x 2 mark)</i></li> <li>• sawing shoulders <i>(4 x 1 mark)</i></li> </ul>	<b>12</b>
	2	Dovetail trench <ul style="list-style-type: none"> <li>• sawing shoulders <i>(2 x 1 mark)</i></li> <li>• trenching <i>(2 marks)</i></li> </ul>	<b>4</b>
		<b>Total</b>	<b>16</b>

<b>TOP SLIDING</b>	<b>G</b>	<b>PROCESSING</b>	<b>Marks</b>
	1	Chamfers	<b>2</b>
	2	Dovetail	<b>4</b>
		<b>Total</b>	<b>6</b>

<b>BASE SIDES</b>	<b>H</b>	<b>PROCESSING</b>	<b>Marks</b>
	1	Two mortices <i>(2 x 3 marks)</i>	<b>6</b>
	2	Holes - screws <ul style="list-style-type: none"> <li>• drilling and countersinking screws + position <i>(4 x 1 marks)</i></li> </ul>	<b>4</b>
		<b>Total</b>	<b>10</b>

<b>BASE MIDDLE RAIL</b>	<b>I</b>	<b>PROCESSING</b>	<b>Marks</b>
	1	Two tenons <i>(2 x 3 marks)</i>	<b>6</b>
		<b>Total</b>	<b>6</b>



