



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate 2017

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.

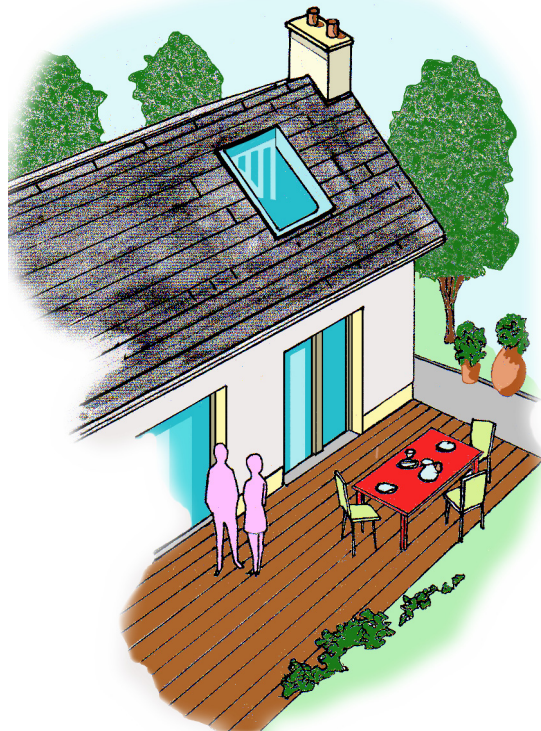


Coimisiún na Scrúduithe Stáit
State Examinations Commission

Scrúdú Ardteistiméireachta, 2017

Staidéar Foirgníochta

Teoiric – Gnáthleibhéal



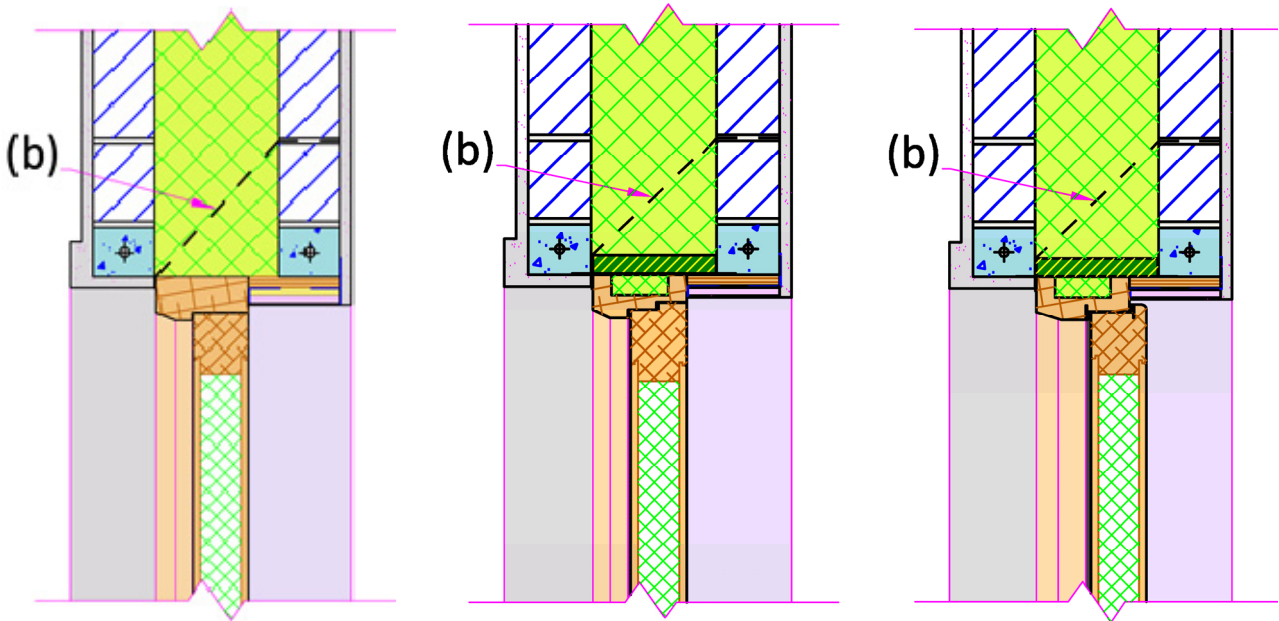
Construction Studies

Theory – Ordinary Level

Marking Scheme

Ceist 1.

Part (a)



Specification – typical detail

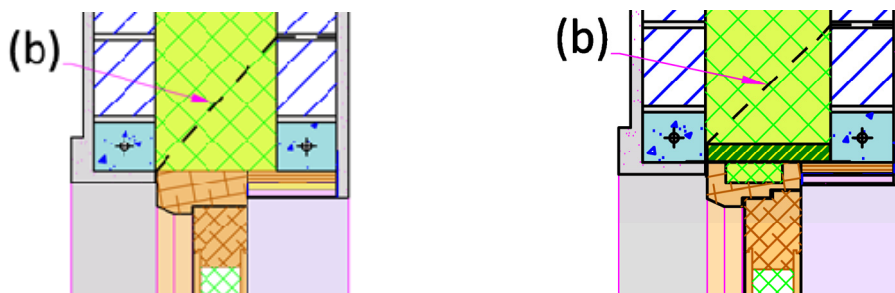
- 19 mm external render
- 100 mm concrete block outer leaf
- 200 mm full-fill cavity insulation
- Damp Proof Course - DPC
- 100mm concrete block inner leaf
- 15 mm internal plaster with skim coat
- Reinforced concrete lintels
- 18 mm plywood
- Airtightness seal taped to masonry and door frame
- Insulated plasterboard with skim coat
- Proprietary cavity closer
- 150 mm x 70 mm thermally broken door frame
- Draught proof strips to door
- 90 mm door top rail and insulation
- 12 mm vertical sheeting on both sides of the door.

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

Part (b)

Show clearly on your drawing how to prevent the entry of rainwater at the head of the door

- Inserting Damp Proof Course (DPC) between the inner and the outer leaf
- Damp Proof Course sloping towards the outside.

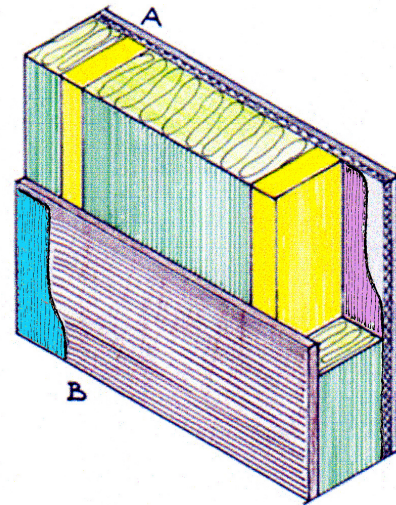


Ceist 2

Part (a)

How the inner leaf is to be insulated – Notes and sketch

- The insulation is placed in the area between the uprights
- Structural sheeting board B is fixed to the uprights giving rigidity
- A breather membrane is fitted
- The cavity and external leaf is formed to the exterior
- The airtightness/vapour barrier is fitted on the warm side of the insulation
- Insulated plasterboard A is then fitted to the interior.



Type of insulation

- Blown cellulose insulation.
- Sheep wool, fibreglass, woodfibre, cork board, rockwool,
- Mineral fibre batts – rockwool, Gutex insulation
- Extruded polystyrene – batts fitted between joists
- Expanded polystyrene – pearl insulation
- Spray foam insulation – water or polyurethane based.

Thickness of insulation

- Thickness of insulation used is at least 200mm.

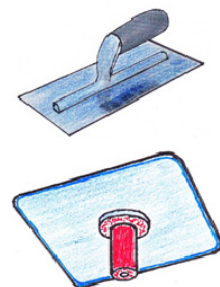
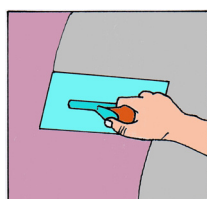
Part (b)

Two advantages of insulating the inner leaf of the external wall

- Insulation reduces the heat loss
- Most effective way to save energy inside the home
- Thermal insulation will keep the heat in your house
- Ensures better thermal comfort for occupants
- Energy bills are reduced
- Good for the environment
- It improves the U-value rating
- It improves the Building Energy Rating (BER)
- The house will be warmer
- Value of house is higher.

Part (c)

Show on the sketch one method of providing a surface finish to the plasterboard prior to painting – such as

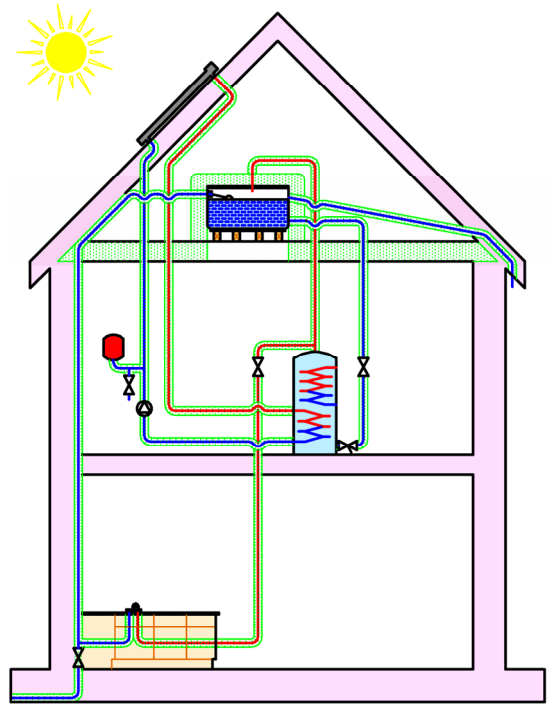


Ceist 3

Part (a)

Given sketch showing pipework necessary to supply hot water to a kitchen sink – typical sizes

- 15 mm rising main with stop valve
- Insulated storage tank and ball valve
- 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 to kitchen sink
- Solar panel
- 22 mm flow from solar panel to cylinder
- 22 mm return from cylinder to solar panel
- Pump and isolator located on the return
- Expansion tank / vessel and pressure release valve.



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

Part (b)

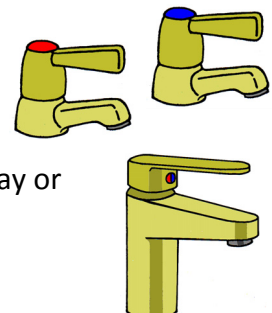
Two advantages of using a solar panel to provide hot water for a dwelling house – such as

- Energy bills for hot water are reduced
- Water in the cylinder is seldom cold
- Once installed running costs are low
- An effective way to save energy inside the home
- Reduces CO₂ from the burning of fossil fuels
- Solar power saves money
- Helps to slow down climate change
- Solar is an eco-friendly source of energy.

Part (c)

On a separate sketch, show the design for a tap suitable for use by a person with limited hand mobility - Sketch

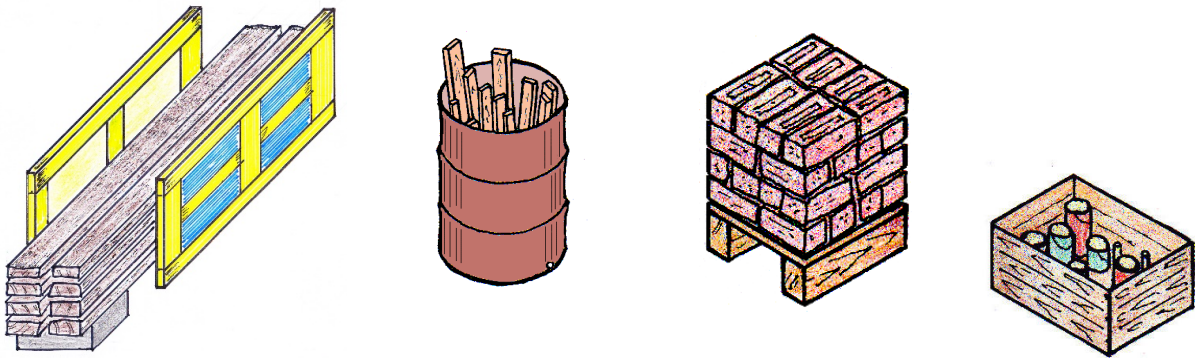
- Taps should be lever type
- The lever requiring a quarter turn between off and full flow
- Taps should be positioned within easy reach.
- The water pressure should be adjusted so that the water does not spray or splash
- Taps should be tall, swivel-neck mixer type.



Ceist 4

Part (a)

Show how to properly sort and store waste on-site for reuse – Sketches



Show how to properly sort and store waste on-site for reuse – Notes

- The old boards can be put together and stacked
- Blocks may be used as a base
- The old doors can be stored on edge next to the boards
- The doors can provide protection to the stack of boards
- Other materials such as bricks, blocks and paint cans can be segregated and stored separately
- Barrels/drums can be recycled to store water or for smaller off cuts
- A suitable cover may be put in place over the stored waste
- Other suitable solutions will be accepted.

Part (b)

Discuss two reasons why the waste should be kept to a minimum on a construction site

- Waste is a potential safety hazard – can fall over it, can fall down on a worker
- Well managed site reduces the risk of accidents
- It is good for the environment
- It reduces energy usage and wastage
- It helps promote the idea of upcycling
- It promotes the idea of reduce, reuse and recycle
- Landfill sites are becoming full and are scarce
- It is good example for all in the community
- It reduces the overall cost of the building
- It is expensive to dispose of waste materials
- Helps to comply with environmental legislation.

Part (c)

Recommend two suitable uses for the wood that has been sorted on-site for reuse

- Old doors can be dipped, cleaned, sanded, painted and reused
- The doors could be reused within the house to maintain the architectural integrity of the building
- The wood could be used for shelving in utility room
- Floor boards can be cleaned, painted or varnished and when checked for suitability can be reused inside or outside

- Wood may be up-cycled - cleaned, sanded and oiled
- Certain types of wood waste may be used to make furniture
- Can be used for wooden flooring, garden fences gates etc.
- Wood could be used in garages and garden sheds
- Wood can be cleaned and painted with the wide range of colours available
- The wood could be used for flower plant holders
- Can also be burned as a fuel.

Give one specific reason in support of your recommendation

- Reusing wood cuts down costs
- Reused wood is environmentally friendly
- Reduced transport cost as wood is on site
- Reused wood has low embodied energy.

Ceist 5

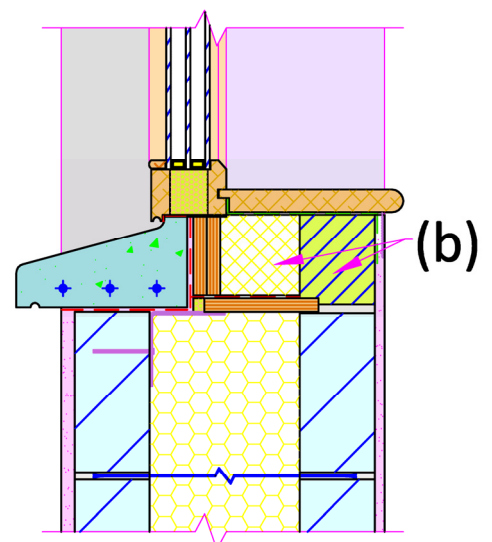
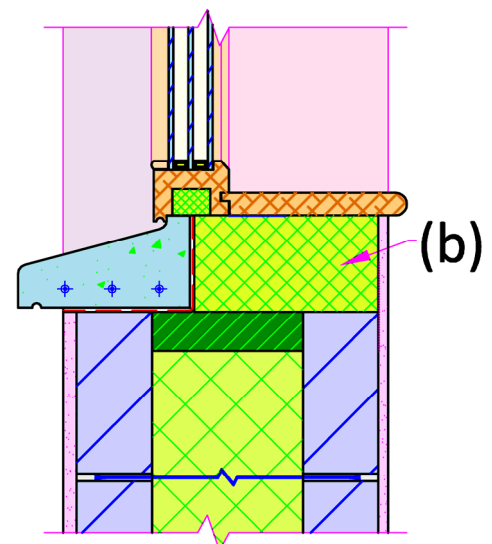
Part (a) – A vertical section through the bottom portion of a window showing the fixed frame of the window with triple glazing and the concrete cill – typical details

- 19 mm external render
- 100 mm concrete block outer leaf
- Wall tie
- 200 mm full-fill cavity insulation
- Proprietary cavity closer
- 100 mm concrete block inner leaf
- 15 mm internal plaster with skim coat
- Reinforced concrete window cill
- Damp proof course (dpc) wrapped around window cill
- Insulation placed at the back of concrete cill to prevent thermal/cold bridge
- Expanded metal mesh to prevent shrinkage cracks between insulation and concrete blocks
- 100 mm x 80 mm thermally broken fixed window frame
- 25 mm window board
- Triple glazing with low e glass.

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

Part (b) – Show on the drawing a typical design detail that would prevent the formation of a thermal/cold bridge at the window cill

- Insulation placed at the back of the window cill together with damp proof course (dpc) wrapped around the window cill.



Ceist 6

Part (a)

Discuss two reasons why safety signs must be displayed at the entrance to a construction site

- Safety signs must be used wherever a potential hazard exists
- Construction sites have many danger areas
- Safety signs alert people to the dangers on a construction site
- Safety signs remind all of Health and Safety on site
- The signs show that machinery, work at heights and trenches exist on site
- Remind site workers and visitors to wear hard hats and high visibility jackets
- Remind site workers to use correct footwear.

Part (b)

Three items of personal protective equipment (ppe) that must be worn by workers on a construction site –Notes and Sketches

Give one specific reason why each item should be worn

Hard hat

- These are special hats worn on site and in industry
- This is used to protect workers from falling objects
- The hard hat is widely recognised as a safety item.

Reason

- The colour of the helmet ensures that workers are visible
- The wearing of helmets is mandatory for workers and visitors to a site.



Safety boots

- These are special boots worn on construction sites
- These are used to protect workers feet
- Usually have steel toecap and protective layer in the sole
- Protect feet from heavy objects
- Protect feet from cutting equipment.

Reason

- The safety boots provide extra safety for workers on the site
- The wearing of safety boots is mandatory for workers and visitors on a site.



High visibility vest

- This is a special vest or jacket worn by workers on site
- The vest provides clear identity of the workers with reflective strips
- The bright colours give clear indication of workers
- High visibility jackets are widely recognised for safety
- High visibility vest is very important when machinery is being used on the site.

Reason

- Operators of machinery can easily see the workers on site
- The wearing of a high visibility vest is mandatory for workers and visitors on a site.



Part (c)

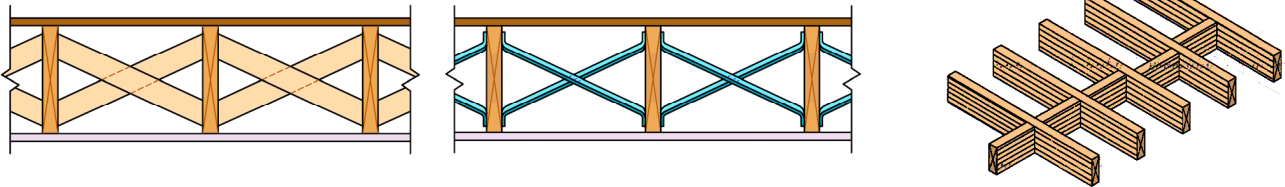
Describe two specific safety precautions that should be observed when using electrical power tools on a construction site

- Check to make sure that all electrical leads are in good condition
- Damaged leads are very dangerous and should be replaced
- Use the correct transformer with proper outdoor connections
- Make sure work is carried out in dry conditions
- Electric power tools should not be used in wet conditions
- Tools to be used by skilled trained operators
- The tools must carry the CE mark
- Eye protection should be worn as needed
- Ear protection to be worn as needed
- Use double insulated tools.

Ceist 7

Part (a)

One method of preventing the flooring joists from twisting - Sketch - such as



One method of preventing the flooring joists from twisting- Notes - such as

Herringbone bridging/strutting - Wood

- Struts are made of wood
- The struts fit firmly and are tightened between the joists
- The struts are easily fitted between the joists
- This method uses less wood
- Allows easy access for electrical cables and plumbing between the joists
- Strengthens floor joists
- Tied and wedged to adjacent walls.

Herringbone bridging/strutting - Metal

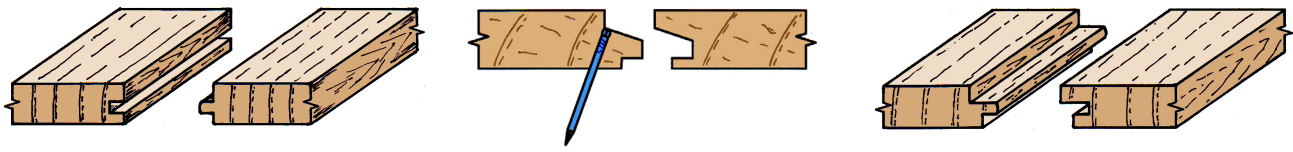
- Metal webbing/bridging used between joists
- The struts are fitted similar to wooden struts.

Solid bridging/strutting - Wood

- The struts are fitted vertically between the joists
- Struts are staggered to allow for end nailing or in line, in which case skew nailing is used
- The struts should be the same height as the joists
- Strutting usually occurs at mid-span of the joists.

Part (b)

Sketch of a tongue-and-groove joint between two flooring boards – Sketch



Two advantages a tongue-and-groove joint between two flooring boards - Notes

- The joint closes the gap between the boards
- The joint helps to draught proof the floor
- The joint adds strength to the overall floor
- If shrinkage occurs the gap will remain closed
- Boards can be glued together at the tongue
- Boards can be secret nailed through the tongue.

Part (c)

One advantage of converting an attic to provide additional bedroom accommodation

- Attic conversion usually costs less than ground floor extension
- Attic conversion provides an extra room
- Extra insulation required in attic, improves thermal performance of house – lower energy bills
- May not need planning permission, if roof lights are kept to rear
- Unlike ground extension no extra ground space is necessary – not extending the original footprint
- Can increase the value of the house
- Is good for environment – no need for foundations, block walls etc.
- More energy efficient form.

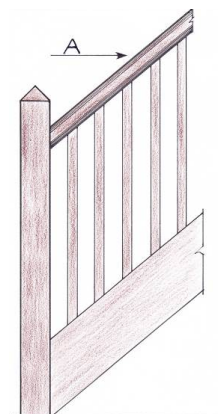
One disadvantage of converting an attic to provide additional bedroom accommodation

- Can be difficult to get the required head height
- May compromise the structural element of the existing roof
- There is disruption to the household while the conversion is taking place
- Sometimes difficult to insulate the conversion properly
- In older houses attic conversion may be difficult
- May be difficult to meet building regulations with regard to habitable spaces in attic conversions.

Ceist 8

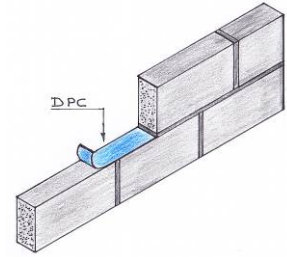
Hand rail

- This is solid member **A** fitted to the newel post
- The handrail may also be fitted to a wall surface adjoining the stairs
- The rail is located parallel to the pitch line of a stairs
- The balusters are fitted to the underneath surface of the hand rail
- The handrail is generally made of wood with section size of 75 mm × 50 mm
- The handrail is fitted to the newel post using a mortise and tenon joint
- The top surface should be 900 mm to 1000 mm measured vertically above the pitch line
- The handrail should give firm safe support for users.



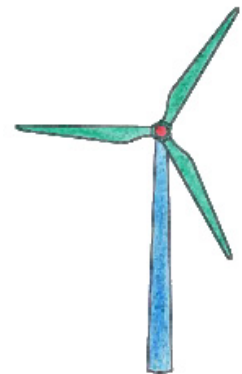
Damp-proof course

- This is an impermeable barrier fitted in external and internal walls
- The DPC is linked to the damp-proof membrane/radon barrier
- It prevents rising damp in walls
- It prevents the passage of damp from external leaf to the internal leaf at window and door openings
- Damp-proof course may be vertical or horizontal
- The DPC is fitted at 150mm above the external surrounds of the building
- Heavy duty plastic is normally used as a DPC
- Other suitable materials may be used.



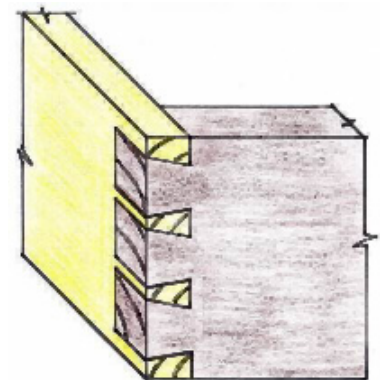
Wind Turbine

- This is a device used to convert the energy of the wind into mechanical energy
- This energy is then used to generate electricity
- Wind turbines are made up of three main parts, blades, generator and structural support tower
- Wind turbines may be used for small scale applications
- They may also be used for large scale production of commercial electricity
- Small wind turbines are used as auxiliary power on boats/caravans and charging batteries
- Wind turbines are located to exploit the wind energy at a given location
- Wind is an eco-friendly source of energy.



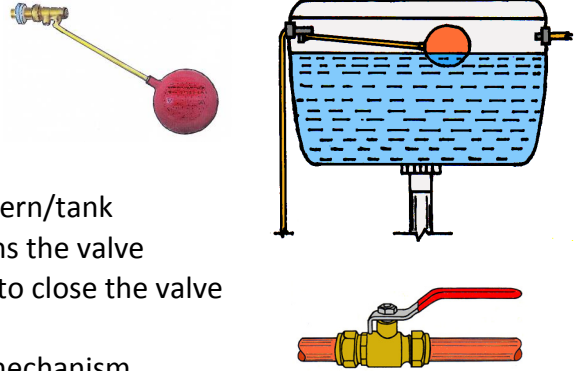
Box dovetail joint

- The joint is used for the manufacture of box shapes
- This joint is 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 dovetail slope in softwood is usually 1:6
- The dovetail slope in hardwood is usually 1:8
- The joint has a series of tails and pins as part of the design
- The joint gives decorative appearance when correctly made
- Contrasting woods may be used to highlight the dovetail effect
- Used mainly in drawer construction.



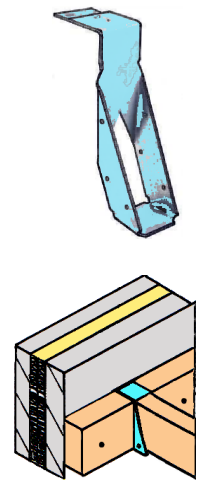
Ball valve

- This valve is used to control the entry of water into toilet cisterns or tanks
- The control valve is mounted on the side of the cistern/tank
- The valve is connected to the water supply
- The valve is linked to a plastic float within the cistern/tank
- As water is used the float drops and the arm opens the valve
- The water enters the cistern/tank rising the float to close the valve cutting off the supply of water
- A lever valve, as shown, also incorporates a ball mechanism.



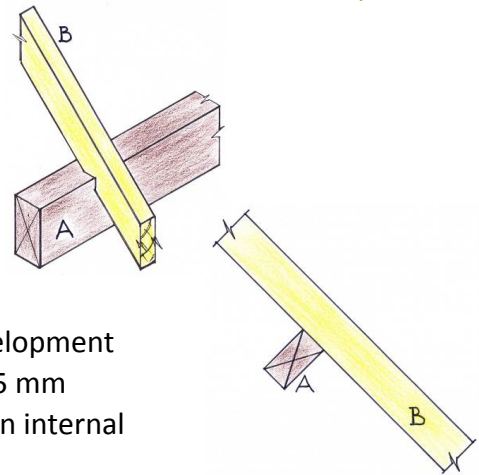
Joist hanger

- Joist Hangers are designed to hold timber joists in place
- They are used to anchor decking, floors and ceilings
- Joist hangers wrap around three sides of the joist end
- Nails or screws are placed into predrilled holes to secure the joist
- Joist hangers are versatile and stronger than using nails or screws alone
- They are also easier to fit and relatively cheap
- They come in many shapes and sizes to fit different beams and framing configurations
- They are available as galvanised units.



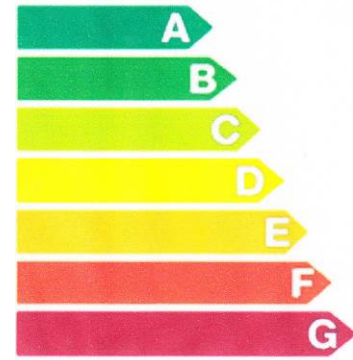
Purlin

- This is the member **A** stretching under the rafter **B**
- It provides support to the roof structure
- The purlin provides alignment of the rafters
- The purlin is an important part of a traditional cut roof
- The purlin helps in the construction of attic space development
- The typical cross section size of a purlin is 175 mm x 75 mm
- It is supported by struts which transfer the weight to an internal load bearing wall
- The purlin may also be supported by means of a Rolled Steel Joist (RSJ).



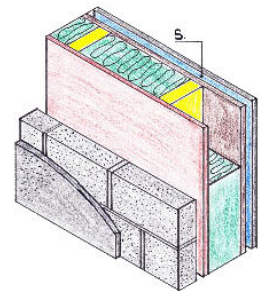
Energy rating

- This is a table showing the efficiency of electrical appliances
- The rating labels vary from **A** to **G**
- An **A** rating is the most energy efficient with **G** being the least efficient
- The labels give useful information to the consumer as they choose between various models
- The ratings are shown on a coloured list
- Energy rating also applies to dwelling houses
- A Building Energy Rating or BER is an energy label report for homes. The rating is again the **A** to **G** scale
- A-rated homes are the most energy efficient and have the lowest energy bills.



Service cavity

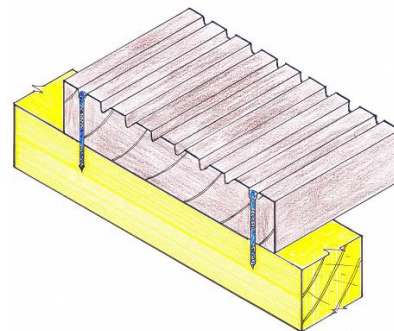
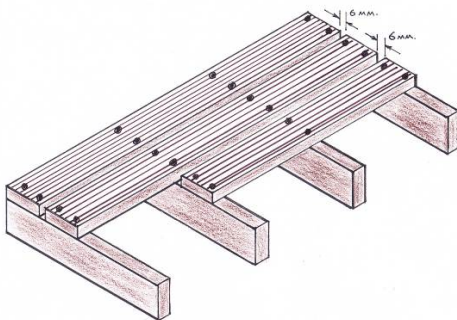
- This is a separate cavity space on the inside of an external wall **S**
- The cavity is used to carry electrical wiring and plumbing services
- This cavity prevents damage to the airtightness membrane
- It protects the airtightness of the external wall structure
- Service cavity is used as part of solid walls or timber frame construction.



Ceist 9

Part (a)

Show how to fix wooden decking to the joists to ensure that the decking does not warp or bow, especially during wet weather - Sketches



Show how to fix wooden decking to the joists to ensure that the decking does not warp or bow, especially during wet weather – Typical details

- Lay the decking boards on the joists starting next to the house
- Allow a space of 6mm between each board
- This allows for drainage and expansion in wet weather
- Drill pilot holes for the fixing screws
- Screws provide a more secure fixing than nailing
- Use stainless steel screws
- Fix the ends of the boards at first
- Then fix the boards to every joist in between.

Part (b)

Recommend a suitable applied finish to preserve the external decking

- A wide range of oil based varnish/stain finishes is available for decking surfaces
- These are available from regular manufacturers
- Finishes are supplied under headings such as Deck oil, Deck stain or Deck paint
- Paint finishes are available in a range of colours
- All finishes help protect the decking and extend its life.

Any other suitable finish



Steps involved in preparing the wood and in applying the recommended surface finish

- The surface is cleaned
- The surface may be cleaned using white spirit
- If using water based finish use a damp cloth to clean the surface
- The varnish/stain is applied using a brush or cloth
- Apply two or three coats
- Allow to dry between successive coats.

Part (c)

Suggest two advantages an external patio has for the occupants of a dwelling house

- It extends the area of the house
- Provides a level surface for people with mobility issues
- Patio provides an open external play area for children
- Provides a place to eat, sit-out, relax and entertain in an outdoor space
- Decking furniture may be used for relaxation
- Ideal for summer dining
- Brings the occupants close to nature - biophilia
- It adds to the value of the house.

Question 1 – Section through the top of door, showing wall, concrete lintels doorframe and door		
Details - typical sizes		Marks
Part (a)		
19 mm external render		5
100 mm concrete block outer leaf		5
200 mm Full-fill cavity insulation		5
Damp proof course (dpc)		5
100mm concrete block inner leaf		5
15 mm internal plaster with skim coat		5
Reinforced concrete lintels		5
18 mm plywood with airtightness seal to wall and doorframe		5
Insulated plasterboard with skim coat		5
Proprietary cavity closer		5
150 mm × 70 mm door frame		5
90 mm door top rail and insulation		5
12 mm vertical sheeting to both sides of the door		5
Any 7 of the above details (5 marks each)	Sub-total	35
Three typical dimensions		3
Part (b)		
Show on drawing how to prevent the entry of rainwater at the head of the door		
Damp Proof Course between the inner and outer leaf		4
Draughting, accuracy and scale	(excellent, good, fair)	8
	8 6 4	
	Total	50 marks

Question 2 – Insulating the inner leaf and surface finish to the plasterboard		
Details		Marks
Part (a)		
How the inner leaf is insulated - Sketches		
Inner leaf		5
Insulation		5
Quality of sketches	<i>(excellent, good, fair)</i> 8 6 4	8
How the inner leaf is insulated - Notes		
Valid detail one		4
Valid detail two		4
Type and thickness of insulation		4
Part (b)		
Two advantages of insulating the inner leaf of the external wall		
Advantage one		6
Advantage two		6
Part (c)		
Method of providing a surface finish to the plasterboard prior to painting - Sketch		
Quality of sketch	<i>(excellent, good, fair)</i> 8 6 4	8
	Total	50 marks

Question 3 – Sketch showing pipework to supply hot water to a sink using a solar panel		
Details – typical sizes		Marks
Part (a)		
15 mm rising main,		4
Cold water storage tank and overflow pipe		4
22 mm cold water supply to hot water cylinder		4
Hot water cylinder		4
22 mm expansion pipe from hot water cylinder		4
Hot water supply to kitchen sink		4
Solar panel		4
Pipework from solar panel to cylinder		4
Expansion vessel		4
All necessary valves		4
Any 7 of the above details (4 marks each)	Sub-total	28
Quality of sketch	<i>(excellent, good, fair)</i> 8 6 4	8
Part (b)		
Two advantages of using a solar panel to provide domestic hot water for a house		
Advantage one		4
Advantage two		4
Part (c)		
On the separate sketch, show a design for a tap suitable for use by a person with limited hand mobility - Sketch		
Quality of sketch	<i>(excellent, good, fair)</i> 6 4 2	6
	Total	50 marks

Question 4 – Waste management on a construction site	
Details	Marks
Part (a)	
Show how to properly sort and store waste on-site for reuse - Sketches	
Valid details	4
Quality of sketches <i>(excellent, good, fair)</i>	8
	8 6 4
Show how to properly sort and store waste on-site for reuse - Notes	
Valid detail one	6
Valid detail two	6
Part (b)	
Two reasons why waste materials should be kept to a minimum on a construction site - Notes	
Reason one	5
Reason two	5
Part (c)	
Two suitable uses for the wood that has been sorted on-site for reuse	
Suitable use one	5
Suitable use two	5
One specific reason in support of each recommendation	
Specific reason one	3
Specific reason two	3
Total	50 marks

Question 5 – Vertical section through external, cill and bottom portion of window frame		
Details - typical sizes		Marks
Part (a)		
Reinforced concrete window cill		4
Damp proof course (dpc) wrapped around window cill		4
19 mm external render		4
100 mm concrete block outer leaf		4
Wall tie		4
Full-fill cavity insulation		4
Proprietary cavity closer		4
100 mm concrete block inner leaf		4
15 mm internal plaster with skim coat		4
Window board		4
100 mm × 80 mm thermally broken fixed frame of window		4
Triple glazing with low e glass		4
Any 9 of the above details (4 marks each)	Sub-total	36
Three typical dimensions		3
Part (b)		
Show on drawing a typical design detail that would prevent thermal/cold bridge at the window cill		
Insulation is placed at the back of the window cill to prevent thermal/cold bridge		3
Draughting, accuracy and scale	<i>(excellent, good, fair)</i> 8 6 4	8
	Total	50 marks

Question 6 - Safety	
Details	Marks
Part (a)	
Discuss two reasons why safety signs must be displayed at the entrance to a construction site	
Reason one	5
Reason two	5
Part (b)	
Three items of personal protective equipment (ppe) that must be worn by workers on a construction site – Sketch, notes and reason	
Hard hat	
Quality of sketch <i>(excellent, good, fair)</i> 6 4 2	6
Note and specific reason	4
Safety boots	
Quality of sketch <i>(excellent, good, fair)</i> 6 4 2	6
Note and specific reason	4
High visibility vest	
Quality of sketch <i>(excellent, good, fair)</i> 6 4 2	6
Note and specific reason	4
Part (c)	
Two specific safety precautions that should be observed when using electrical power tools on a construction site - Notes	
Specific safety precaution one	5
Specific safety precaution two	5
Total	50 marks

Question 7 – Attic conversion to provide an additional room	
Details	Marks
Part (a)	
One method of preventing flooring joists from twisting - Sketch	
Valid details	4
Quality of sketch <i>(excellent, good, fair)</i> 8 6 4	8
One method of preventing flooring joists from twisting - Notes	
Valid detail one	4
Valid detail two	4
Part (b)	
Tongue-and-groove joint between two flooring boards - Sketch	
Valid details	4
Quality of sketch <i>(excellent, good, fair)</i> 8 6 4	8
Two advantages of tongue-and-grove flooring boards - Notes	
Advantage one	5
Advantage two	5
Part (c)	
One advantage of converting an attic	
Advantage	4
One disadvantage of converting an attic	
Disadvantage	4
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 – External patio at the rear of a house	
Details	Marks
Part (a)	
Show how to fix wooden decking to the joists to ensure that the decking does not warp or bow, especially during wet weather - Sketches	
Valid details	4
Quality of sketch <i>(excellent, good, fair)</i> 8 6 4	8
Show how to fix wooden decking to the joists to ensure that the decking does not warp or bow, especially during wet weather - Notes	
Valid detail one	4
Valid detail two	4
Part (b)	
Recommend a suitable applied finished for the external decking	
Suitable applied finish	4
Steps involved in preparing the wood and in applying the recommended surface finish - Notes	
Valid detail one	4
Valid detail two	4
Steps involved in preparing the wood and in applying the recommended finish - Sketches	
Quality of sketch <i>(excellent, good, fair)</i> 8 6 4	8
Part (c)	
Suggest two advantages an external patio has for the occupants of a dwelling house	
Advantage one	5
Advantage two	5
Total	50 marks



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Scrúdú na hArdteistiméireachta 2017
Leaving Certificate Examination 2017

Scéim Mharcála

Marking Scheme

(150 marc)



Staidéar Foirgníochta
Triail Phraticiúil

Construction Studies
Practical Test

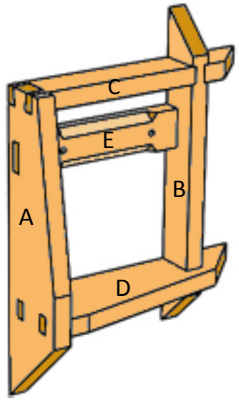
Marking Scheme – Practical Test

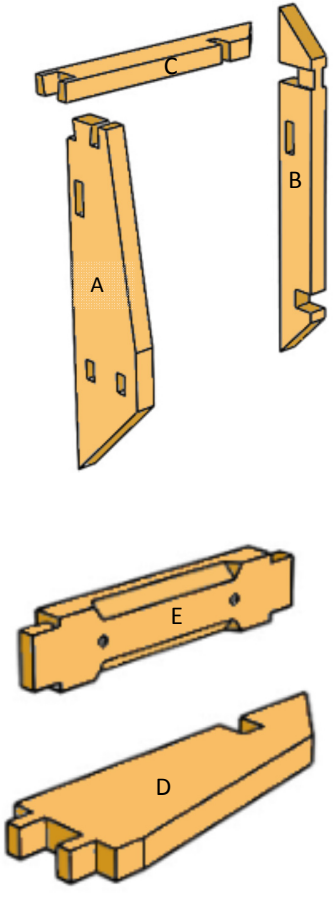
Note:

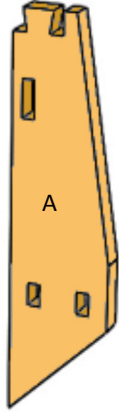
The artefact is to be hand produced by candidates without the assistance of machinery. However the use of a battery powered screwdriver is allowed.

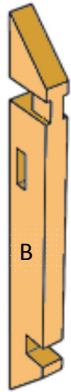
Where there is evidence of the use of machinery a penalty applies.

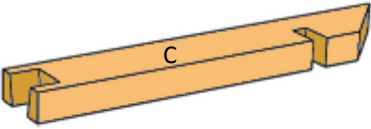
Component is marked out of 50% of the marks available for that procedure.

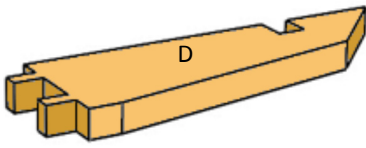
	(i)	OVERALL ASSEMBLY	MARKS
	1	Overall quality of assembled artefact	10
	2	Design and applied shaping to edges <ul style="list-style-type: none"> • design <i>(3 marks)</i> • shaping <i>(3 marks)</i> 	6
	Total		16

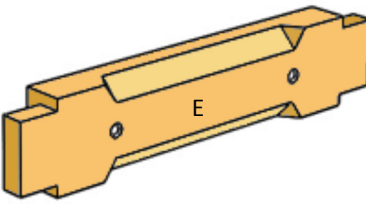
	(ii)	MARKING OUT	Marks
	1	Piece A <ul style="list-style-type: none"> • joints - dovetail <i>(3 marks)</i> <li style="padding-left: 20px;">- mortices <i>(3 × 2 marks)</i> • slopes <i>(2 × 1 mark)</i> 	11
	2	Piece B <ul style="list-style-type: none"> • joints - bottom trench <i>(2 marks)</i> <li style="padding-left: 20px;">- mortice <i>(2 marks)</i> <li style="padding-left: 20px;">- top trench <i>(3 marks)</i> • slopes <i>(2 × 1 mark)</i> 	9
	3	Piece C <ul style="list-style-type: none"> • joints - dovetail pins <i>(3 marks)</i> <li style="padding-left: 20px;">- trench <i>(2 marks)</i> • slope <i>(1 mark)</i> 	6
	4	Piece D <ul style="list-style-type: none"> • joints - tenons <i>(2 × 2 marks)</i> <li style="padding-left: 20px;">- trench <i>(2 marks)</i> • slopes <i>(2 × 1 mark)</i> 	8
	5	Piece E <ul style="list-style-type: none"> • joints - bare faced tenons <i>(2 × 3 marks)</i> • stopped chamfers <i>(2 × 2 marks)</i> 	10
Total		44	

PIECE A	(iii)	PROCESSING	Marks
	1	Dovetail <i>(6 marks)</i>	6
	2	Mortice <i>(4 marks)</i>	4
	3	Two mortices <i>(2 × 4 marks)</i>	8
	4	Shaping sloped edges <i>(2 × 2 marks)</i>	4
			Total

PIECE B	(iv)	PROCESSING	Marks
	1	Bottom trench <i>(3 marks)</i>	3
	2	Mortice <i>(4 marks)</i>	4
	3	Top trench <i>(9 marks)</i>	9
	4	Shaping sloped edges <i>(2 × 2 marks)</i>	4
			Total

PIECE C	(v)	PROCESSING	Marks
	1	Dovetail pins <i>(4 marks)</i>	4
	2	Trench <i>(3 marks)</i>	3
	3	Shaping sloped edge <i>(2 marks)</i>	2
			Total

PIECE D	(vi)	PROCESSING	Marks
	1	Two tenons <i>(2 × 4 marks)</i>	8
	2	Trench <i>(3 marks)</i>	3
	3	Shaping sloped edges <i>(2 × 2 marks)</i>	4
		Total	15

PIECE E	(vii)	PROCESSING	Marks
	1	Barefaced tenons <ul style="list-style-type: none"> • vertical sawing <i>(2 × 3 marks)</i> • cutting across grain <i>(2 × 3 marks)</i> 	12
	2	Shaping stopped chamfer <i>(2 × 4 marks)</i>	8
	3	Drilling and countersinking hole <i>(2 × 2 marks)</i>	4
		Total	24



Construction Studies

Assessment of Candidates' Practical Coursework

Examination Number:

- Type of Project:**
- | | |
|---|---|
| <input type="checkbox"/> Practical Craft | <input type="checkbox"/> Building Science |
| <input type="checkbox"/> Written/Drawn with Scale model | <input type="checkbox"/> Composite |

Marking Scheme		Maximum Marks	Marks Awarded
A Planning of Project <ul style="list-style-type: none"> • Ability to design an appropriate plan of procedure • Evidence of research • Preparation of working drawings/use of models as graphic aids 	Subtotal	30	
B Report Writing <ul style="list-style-type: none"> • Design folio detailing planning, execution and evaluation of project • Critical appraisal of project for quality, function and finish • Conclusions from practical experience of project work 	Subtotal	30	
C Manipulative Skills <ul style="list-style-type: none"> • Skills in preparation and finishing of materials • Safe use of tools and machines - Hand/Power/CNC • Skills in assembly of materials 	Subtotal	30	
D Presentation of Project <ul style="list-style-type: none"> • Task completed to acceptable standard • Appropriate use of materials • Satisfactory knowledge of construction technology 	Subtotal	30	
E Experiments <ul style="list-style-type: none"> • Evidence of ability to plan and carry out three experiments <i>Experiments should be related to the project work or selected from the suggested experiments outlined in the syllabus for Construction Studies.</i>	Experiment 1		
	Experiment 2		
	Experiment 3		
	Subtotal	30	
Total:		150	

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