



# basic education

---

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**CIVIL TECHNOLOGY: WOODWORKING**

**NOVEMBER 2018**

**MARKING GUIDELINES**

**MARKS: 200**

**These marking guidelines consist of 19 pages.**

**QUESTION 1: OHSA, MATERIALS, TOOLS, EQUIPMENT AND JOINING (GENERIC)**

## 1.1

- |       |     |     |
|-------|-----|-----|
| 1.1.1 | F ✓ | (1) |
| 1.1.2 | A ✓ | (1) |
| 1.1.3 | G ✓ | (1) |
| 1.1.4 | E ✓ | (1) |
| 1.1.5 | B ✓ | (1) |

## 1.2

- Do not throw any tools or materials from a scaffold. ✓
- Never jump on to and off a scaffold. ✓
- Never overload a scaffold.
- Remove or cover sharp edges or corners.
- Always attach free-standing scaffoldings to a building.
- Use a ladder to get on and off a scaffold.
- Keep free of waste or any other obstruction.
- Never jump on a scaffold while working on it.
- Responsible/qualified person must ensure that scaffolding is safe, rigid, stable and firm or has no defects.
- Scaffold must be supplied with guard rails/toe boards.
- Scaffolds must be levelled on uneven ground.
- Do not work on a scaffold in bad weather.
- Wear a safety harness when working on scaffolding.
- Do not throw tools on/off a scaffold.

**ANY TWO OF THE ABOVE** (2)

## 1.3

- It prevents workers from falling off the scaffold. ✓
- It is used as a handrail. ✓
- It is used to strap on safety harnesses.
- To protect the worker working on the scaffold.

**ANY TWO OF THE ABOVE** (2)

## 1.4

- The primary purpose of painting is to protect metals, wood and other material against corrosion and decay. ✓
- Provides a decorative/aesthetic appearance/finishing. ✓
- Protects surfaces from moisture penetration.
- Protects surfaces from rust/uv rays.

**ANY TWO OF THE ABOVE** (2)

- 1.5 The curing of concrete:
- Increases the strength of concrete. ✓
  - Decreases the permeability of hardened concrete.
  - Improves durability of concrete by reducing cracks.
  - Makes concrete more watertight.
  - Minimises shrinkage cracks in concrete.
  - Provides volume stability.
  - Cured concrete can carry more weight without breaking/crumbling than uncured concrete.
  - Prevents rapid drying of concrete.
  - Curing ensures that the hydration process continues.

**ANY ONE OF THE ABOVE** (1)

1.6

- 1.6.1 Multi detector ✓ (1)

- 1.6.2 Tool A is used:
- to detect materials found in/behind walls, ceilings and underneath floors, including ferrous and non-ferrous metals, electrical wiring, wood and metal studs. ✓
  - to locate steel bars and copper pipes. ✓
  - in carpentry, plumbing, and construction.
  - to measure the distance to/from covered objects.

**ANY TWO OF THE ABOVE** (2)

- 1.6.3 The batteries must be removed from the tool:
- to prevent the battery from running flat/battery can die. ✓
  - to prevent acid leaks from batteries damaging the tool.

**ANY ONE OF THE ABOVE** (1)

1.7

- 1.7.1 A – Bolt and nut/Bolt ✓  
B – Rawl bolt ✓ (2)

- 1.7.2 **Bolt and nut**
- Bolts and nuts are used to secure pipe supports to metal parts. ✓
  - To join components together.
- Rawl bolt**
- A Rawl bolt is used to fix a truss hanger to a wall. ✓
  - To fix brackets/structures/panels to a wall/concrete.
  - For construction, renovation and industrial work

**ANY TWO OF THE ABOVE** (2)  
**[20]**

**QUESTION 2: GRAPHICS AS METHOD OF COMMUNICATION (GENERIC)****ANSWER SHEET 2**

NO.	QUESTIONS	ANSWERS	MARKS
1	Identify FIGURE A.	South Elevation/Elevation ✓	1
2	Identify FIGURE B.	Ground floor plan/Floorplan ✓	1
3	Identify number 4.	First floor level/Second floor level/Suspended floor/Floor level/Dash line/ FFL/Expansion joint ✓	1
4	Identify number 5.	Window Sill ✓	1
5	Identify number 9.	Hand wash basin/Wash basin/Washing basin/HWB/Basin ✓	1
6	Identify number 10.	Water closet/WC/Toilet pan ✓	1
7	Identify number 11.	Bath/B ✓	1
8	On what date was the plan printed?	2018/10/02 ✓	1
9	Who drew the building plan?	JP Maloi ✓	1
10	Name the feature in the column for the notes in FIGURE 2 that must be installed in front of the sliding door.	Ramp ✓	1
11	Name the feature in the column for the notes in FIGURE 2 that must give access to the first floor.	Staircase/Stairs/Stairway ✓	1
12	Identify the type of roof that is used for the building in FIGURE A.	Gable roof ✓	1
13	Explain the purpose of number 1.	To cover the opening/close the gap between the two slopes of the roof. ✓ Prevent water and other elements from entering the roof. <b>ANY ONE OF THE ABOVE</b>	1

14	Explain the purpose of number <b>2</b> .	<ul style="list-style-type: none"> <li>To prevent water from falling onto the ground ✓</li> <li>To collect rainwater</li> <li>To channel the rainwater into the downpipe</li> <li>To protect the wall from water</li> <li>To hide the rafters/finish off the roof</li> </ul> <p><b>ANY ONE OF THE ABOVE</b></p>	1
15	Explain the abbreviation FFL at number <b>6</b> .	Finished floor level ✓	1
16	Explain the purpose of number <b>7</b> .	To channel the water from the gutter to the ground. ✓	1
17	Explain the meaning of the arrow on the feature that must be installed in front of the sliding door.	It indicates the direction of the slope of the ramp/it indicates the slope. ✓	1
18	Explain what is meant by 1:10 indicated on the symbol in the notes.	It indicates the slope or the gradient of the ramp/for every 10 metres horizontally rises 1 metre vertically. ✓	1
19	Which room will feature <b>15</b> serve?	The bathroom. ✓	1
20	Explain the short dash lines on the windows.	<ul style="list-style-type: none"> <li>Indicates what direction the window is opening/window opening. ✓</li> <li>Indicates the location of the hinges.</li> <li>Indicates the location of the casement stay.</li> </ul> <p><b>ANY ONE OF THE ABOVE</b></p>	1
21	Deduce the height of window <b>2</b> from the window schedule.	1,2 m or 1 200 mm ✓(Ignore units)	1
22	Deduce the width of window <b>3</b> from the window schedule.	2 m or 2 000 mm ✓(Ignore units)	1
23	On what elevation of the building is the bathroom window situated?	Western elevation/Western side ✓	1

24	Differentiate between component number 3 and component number 8.	3 – window/window frame/reveal frame stile/casement stile ✓ 8 – sliding door /door frame/ door/reveal /sliding door stile ✓	2
25	Differentiate between the light in the lounge and the light in the bathroom.	The light in the lounge is a fluorescent light/1 x 40W-/2x40-/3x40 fluorescent light ✓ and the light in the bathroom is a normal ceiling light ✓	2
26	Recommend a suitable floor covering for the bathroom.	Tile/ Vinyl flooring(Novilon)/ Coloured screed/Polished or stained concrete flooring/Water proof laminated floor/carpet. ✓ <b>ANY ACCEPTABLE ANSWER</b>	1
27	Recommend an appropriate scale to which FIGURE A should be drawn, according to SANS.	1:50/100/200 ✓	1
28	Recommend an alternative sanitary fitment to replace number 11 that will serve a similar purpose.	Shower ✓	1
29	Calculate the internal area of the office in m <sup>2</sup> Show ALL calculations.	4 m ✓ x 3 m ✓ = 12 m <sup>2</sup> ✓ OR 12 4 000✓ X 3 000✓ = 12 000 000mm <sup>2</sup>	3
30	Calculate the perimeter of the building. Show ALL calculations.	Positive marking (220 + 3 000 + 110 + 2 800 + 220) ✓ x 2 ✓ = 6 350 x 2 = 12 700 mm ✓ (220 + 4 000 + 110 + 2 000 + 220) ✓ x 2 ✓ = 6 550 x 2 = 13 100 mm ✓ 12 700 + 13 100 mm = 25 800 mm ✓ OR = 25,8 m	7
		<b>TOTAL</b>	<b>40</b>

**QUESTION 3: CASEMENTS, CUPBOARDS, WALL-PANELLING AND QUANTITIES (SPECIFIC)**

- 3.1
- 3.1.1 Tongue and groove boards ✓ (1)
- 3.1.2 520 mm - 570 mm ✓ (1)
- 3.1.3 Cornice ✓ (1)
- 3.1.4 Drip groove ✓ (1)
- 3.1.5 Fanlight ✓ (1)
- 3.2
- 3.2.1
- A – Wood/Timber ✓ (1)
  - B – Glass/Perspex ✓ (1)
- 3.2.2 This part is holding the glass/pane in its place. ✓ (1)
- 3.3
- 3.3.1
- A Storage space/top unit ✓
  - B Hanging space ✓
  - C Shelves/storage space/shelf ✓
  - D Drawers ✓ (4)
- 3.3.2
- Melamine:
- is waterproof. ✓
  - is easier to clean.
  - is more durable.
  - enhance inside appearance.
  - has a smooth finish.
- OR**
- Chipboard:
- Is not water proof
  - Is not easy to clean
  - Is less durable
  - Does not enhance the inner appearance
  - Is not as smooth (1)
- ANY ONE OF THE ABOVE**
- 3.3.3
- E – Front rail/Top rail ✓
  - F – Oval hanging rail/Hanging rail/Pipe rail ✓
  - G – Side ✓
  - H – Kick plate/base/Bottom rail/Plinth ✓ (4)

## 3.4

- 3.4.1
- A – Cornice ✓
  - B – Horizontal rough grounds ✓
  - C – Quarter round/Quadrant ✓
- (3)

- 3.4.2
- To enhance appearance. ✓
  - To give an aesthetic appearance. ✓
  - There is no need to plaster the wall where panelling is to be done.
  - It serves as insulation against sound and heat.
  - For durability

**ANY TWO OF THE ABOVE** (2)



3.5

A	B	C	D
3.5.1			<b>Internal measurements of long walls:</b>
			= 9 000 – 2/220 = 8 560 mm ✓
			OR
			= 9 000 - 440 = 8 560 mm
			<b>Length of wall plates needed:</b>
3.5.2	2/✓	8,56 ✓	17,12 ✓
			17,12 m wall plate needed
			<b>Number of purlins needed</b>
			Number of purlins = $\frac{\text{Length of rafter}}{\text{Distance between centres}} + 1$
			= $\frac{3,6}{0,9} + 1$ OR $\frac{3\,600}{900} + 1$
			= (4 + 1) ✓2 ✓OR (5x2)
			= <u>10 purlins</u> ✓

(4)

(4)  
[30]

**QUESTION 4: ROOFS, CEILINGS, TOOLS AND EQUIPMENT, AND MATERIALS  
(SPECIFIC)**

## 4.1

- 4.1.1 C ✓ (1)
- 4.1.2 A ✓ (1)
- 4.1.3 D ✓ (1)
- 4.1.4 E ✓ (1)
- 4.1.5 F ✓ (1)

## 4.2

- 4.2.1
- A Hipped end ✓
  - B Purlin ✓
  - C Ridge/Ridge plate ✓
  - D Valley rafter/Valley ✓
  - E Overhang/Eaves overhang ✓
  - F Gable end/Gable wall/Wall/Side of building ✓
- (6)
- 4.2.2 76 mm x 50 mm ✓  
76 mm x 76 mm

**ANY ONE OF THE ABOVE** (1)

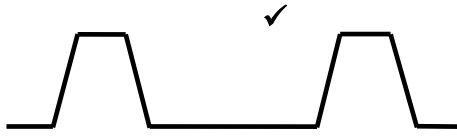
- 4.3
- It allows rain water to be directed into the gutter. ✓
  - So that water does not damage the end of the rafters.
- (1)

**ANY TWO OF THE ABOVE**

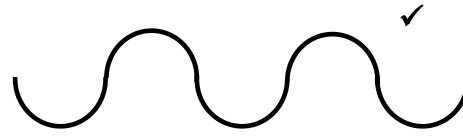
- 4.4
- A good roof covering must be able to resist weather conditions such as rain and wind/resistance against corrosion. ✓
  - Should look durable and enhances the appearance of the building. ✓
  - Should be fire resistant.
  - Should provide insulation against heat and cold.

**ANY TWO OF THE ABOVE** (2)

4.5



IBR sheeting ✓



Corrugated iron sheeting ✓

(4)

4.6

- The installation of steel roofing is faster. ✓
- The installation of steel roofing is more economical. ✓
- The installation of steel roofing is simpler.
- Steel roof covering is cheaper than tiles.
- Steel roof covering is environment friendly.

**ANY TWO OF THE ABOVE**

(2)

4.7

- If roof underlay is not installed there will be more dust inside the roof space. ✓
- If roof underlay is not installed, the roof may not be fully waterproof. ✓
- The risk of wind lifting tiles becomes greater.
- Insulating would not be good.

**ANY TWO OF THE ABOVE**

(2)

4.8

- A - Tie beam ✓
- B - Branderling ✓
- C - Trapdoor ✓
- D - Cover strip ✓

(4)

4.9.1

- A – Router ✓
- B – Combination belt and disc sander. ✓

(2)

4.9.2

Store in a safe, dry place. ✓  
Store it in a wooden or plastic box away from moisture. ✓

(2)

4.9.3

- Maintain like all machinery – lubricate and adjust according to the manufacturer's instructions. ✓
- Clean the belt/disc sander after use. ✓
- Repair or replace damaged electrical cords.
- Handle the sander so as not to damage or impair its accuracy.
- Use machinery only for the intended purpose.
- Do not force material onto the belt/disc of the sander.
- Avoid the use of worn out (clogged) belts and discs.
- Service the machine regularly.

**ANY TWO OF THE ABOVE**

(2)

- 4.9.4
- Table saw/Circular saw/Mitre saw ✓
  - Band saw ✓
  - Radial arm saw ✓
  - Jigsaw
  - Scroll saw

**ANY THREE OF THE ABOVE**

(3)

4.10.1 M – Mechanical grading ✓

V – Visual grading ✓

(2)

4.10.2 6 - The number indicates the strength. ✓

(1)

4.10.3 The SABS symbol. ✓



(1)  
**[40]**

**QUESTION 5: CENTERING, FORMWORK, SHORING AND GRAPHICS AS MEANS OF COMMUNICATION (SPECIFIC)**

- 5.1 A - Concrete beam/Concrete ✓  
B - Brace/Strut ✓  
C - Prop/Adjustable prop ✓  
D - Sole plate ✓ (4)

- 5.2
- Block board ✓
  - Laminated board ✓
  - Shutter board ✓
  - Plywood ✓
  - Timber
  - Hard board/Masonite

**ANY FOUR OF THE ABOVE** (4)

- 5.3
- Wedges are inserted under the bearers and props to support the formwork. ✓
  - Wedges keep the different formwork components sturdy and fixed. ✓
  - Wedges help with the lowering and raising of the formwork. ✓
  - Wedges are used for the levelling of the formwork.
  - Wedges ease the striking of formwork.

**ANY THREE OF THE ABOVE** (3)

- 5.4
- It supports more weight. ✓
  - Support the weight of the fresh concrete.

**ANY ONE OF THE ABOVE** (1)

- 5.5 5.5.1
- A – Laggings ✓
  - B – Ribs ✓
  - C – Bearer ✓
- (3)

5.5.2 Brick arches because they have a solid surface. ✓ (1)

5.5.3 Openly spaced laggings/Open laggings/Open ✓  
Laggings are not close to each other. (1)  
There are spacing's between the openings of the laggings.

**ANY ONE OF THE ABOVE**

- 5.6 5.6.1
- Dead shores are used to support structures. ✓
  - Dead shores carry dead weight above the dead shores, e.g. walls, floors.
  - Support existent walls if openings are made.
  - Transfer the weight of the structure to firm ground during structural renovations.
  - Support a wall if alterations are made.

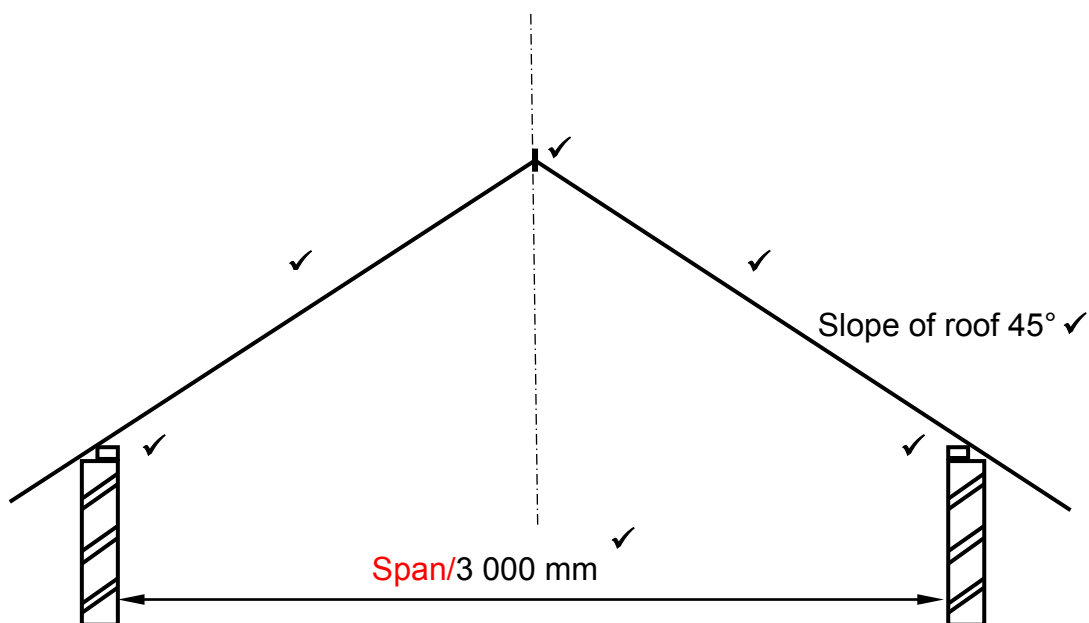
**ANY ONE OF THE ABOVE** (1)

- 5.6.2 Double flying shores provide temporary support to TWO parallel walls where one or two walls show signs of failure. ✓  
 Double flying shores give temporary support to TWO parallel defective walls.  
 Double flying shores can only be used with TWO parallel defective walls between 9 and 15 meters.

**ANY ONE OF THE ABOVE** (1)

- 5.7 5.7.1 The steel dog is used to secure the joint between prop and needle. ✓ (1)
- 5.7.2 Props are used to strengthen or brace the floors and ceiling. ✓ (1)
- 5.7.3 Sole plates spread the weight transferred by the props over a wider area. ✓  
 Prevent vertical props/pipes from sinking into the ground.  
 The soleplate create a level area where the props rest on. (1)
- 5.8 45° ✓ (1)

5.9



ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Span	1	
Wall plates	2	
Rafters	2	
Ridge beam	1	
Slope of the roof 45°	1	
<b>TOTAL:</b>	<b>7</b>	

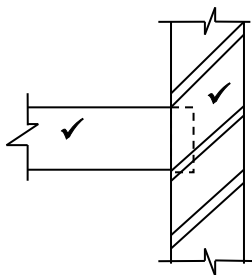
(7)

**[30]**

**QUESTION 6: SUSPENDED FLOORS, STAIRCASES, IRONMONGERY, DOORS AND JOINING (SPECIFIC)**

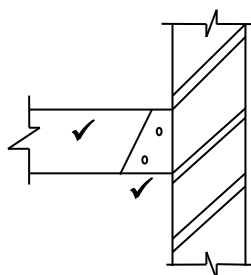
- 6.1      6.1.1      D ✓ (1)
- 6.1.2      C ✓ (1)
- 6.1.3      B ✓ (1)
- 6.1.4      A ✓ (1)
- 6.1.5      A ✓ (1)

6.2



**Joist built into wall**

ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Joist	1	
Built into wall	1	
<b>TOTAL</b>	<b>2</b>	

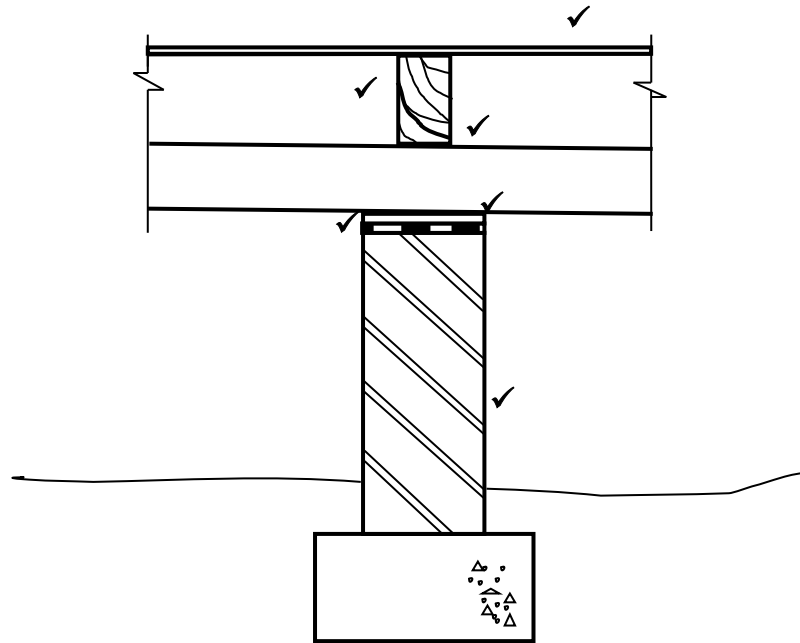


**Joist secured to wall with truss/joist hanger**

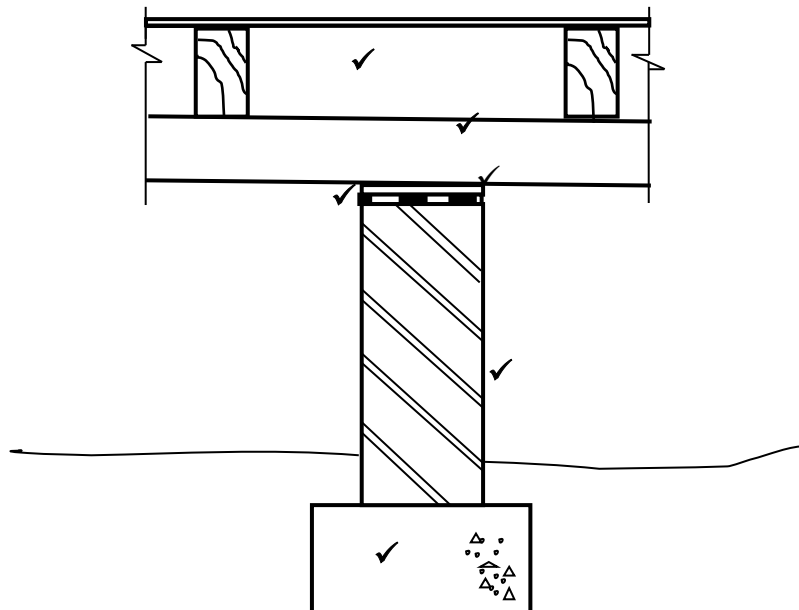
ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Joist	1	
Truss/Joist hanger	1	
<b>TOTAL:</b>	<b>2</b>	

(4)

6.3 Alternative drawing will also be acceptable



OR

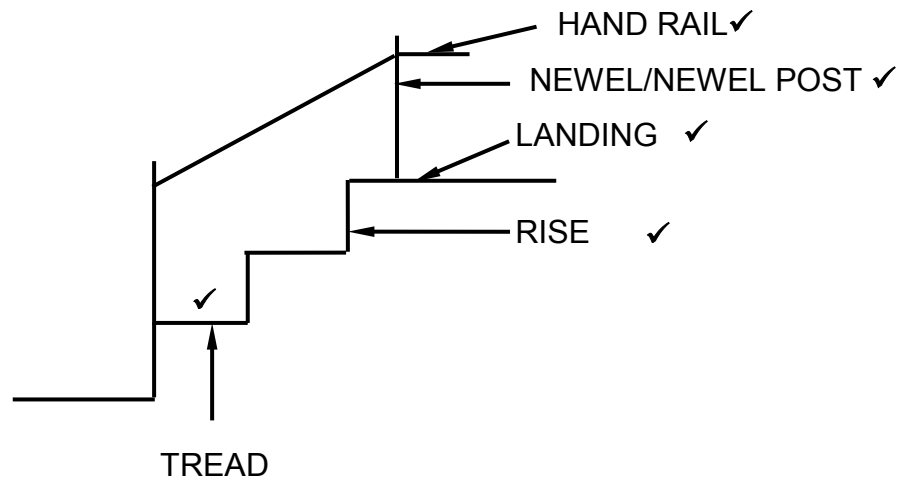


ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
ONE one-brick pier	1	
DPC/Proportion	1	
Ant guard	1	
Bearer	1	
Joist	1	
Floor boards	1	
<b>TOTAL</b>	<b>6</b>	

(6)



6.4



(5)

**2 OR 3 DIMENSIONAL DRAWINGS WILL BE ACCEPTED**

6.5

- Serves as a place of rest. ✓
- For safety in case of a falling accident.
- Facilitates a change in direction when moving up or down stairs.

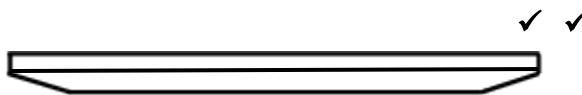
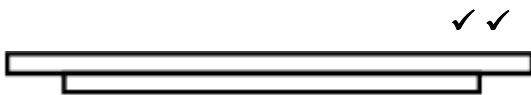
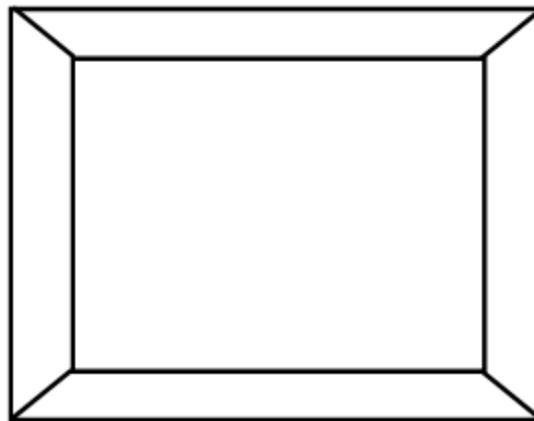
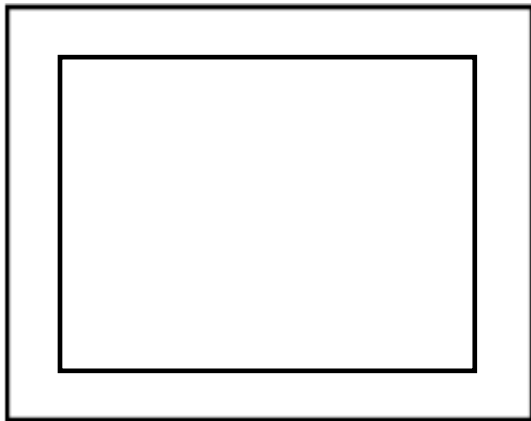
**ANY ONE OF THE ABOVE**

(1)

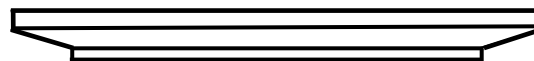
6.6

- |       |                                |     |
|-------|--------------------------------|-----|
| 6.6.1 | Door stile/Lock rail ✓         | (1) |
| 6.6.2 | Frame stile/Door frame/Stile ✓ | (1) |
| 6.6.3 | Frame stile/Door frame/Stile ✓ | (1) |
| 6.6.4 | Door stile ✓                   | (1) |

6.7



OR



ASSESSMENT CRITERIA	MARK	CANDIDATE'S MARK
Raised panel top view	2	
Raised and fielded panel top view	2	
<b>TOTAL</b>	<b>4</b>	

(4)

6.8 The opening allows shrinkage ✓ and expansion of the panel/wood.

(1)

6.9 A – Brace/Strut ✓  
B – Tongue and groove battens/V- Tongue and groove battens ✓  
C – Stile ✓

(3)

## 6.10

- |        |   |     |
|--------|---|-----|
| 6.10.1 | Hinge (Any hinge accepted) ✓                | (1) |
| 6.10.2 | Clout nail/Chipboard screws/Drywall screw ✓ | (1) |
| 6.10.3 | Nail/Skew nail/Perm fix nail ✓              | (1) |
| 6.10.4 | Gang nail/Bolt and nut/Nails ✓              | (1) |

## 6.11

- Hinges ✓
- Casement fasteners ✓
- Casement stays

<b>ANY TWO OF THE ABOVE</b>	(2)
	<b>[40]</b>

<b>TOTAL:</b>	<b>200</b>
---------------	------------