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# basic education

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

## **SENIOR CERTIFICATE/ NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**CIVIL TECHNOLOGY: WOODWORKING**

**NOVEMBER 2020**

**MARKING GUIDELINES**

**MARKS: 200**

**These marking guidelines consist of 21 pages.**

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

- 1.1      1.1.1      E ✓ (1)
- 1.1.2      C ✓ (1)
- 1.1.3      D ✓ (1)
- 1.1.4      H ✓ (1)
- 1.1.5      B ✓ (1)
- 1.1.6      F ✓ (1)
- 1.1.7      A/I ✓ (1)
- 1.1.8      G/K ✓ (1)
- 1.2      Galvanising:
- Adds strength to the original, uncoated metal. ✓
  - Make it last longer/Preservation/Durable.
  - Decorative/Enhance appearance.
  - Makes metal thicker than the uncoated metal.
  - Nails and screws prevent staining.
  - Prevent the material from rusting/corroding.
- ANY ONE OF THE ABOVE** (1)
- 1.3      • Material safety data sheet. ✓
- Sufficient information regarding the protection of health and safety.
- ANY ONE OF THE ABOVE** (1)
- 1.4      • Materials can be moved manually/by means of a wheelbarrow/trolley. ✓
- Materials can be moved by means of machinery/builders hoist/truck/  
             crane/tractor/conveyor/fork lift. ✓ (2)
- 1.5      Water-based paint:
- Dry quickly. ✓
  - Allows marks/smudges to be easily cleaned with water. ✓
  - Give an elastic flexible finish.
  - Durable
  - Gives a decorative finish.
  - Enhances the appearance.
  - Resistant to cracking.
  - Cost effective/Cheaper.
  - Easy to apply.
- ANY TWO OF THE ABOVE** (2)

- 1.6 1.6.1 Multi detector. ✓ (1)  
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- 1.6.2 Care of the multi detector:  
  - Place the multi-detector in its holder directly after use. ✓
  - Do not bump the instrument against objects or drop it. ✓
  - Protect the multi-detector against moisture and direct sunlight.
  - If the measuring tool is not used for a long period, remove the battery.
  - Wipe away dirt or spots with a dry, soft cloth.
  - Switch off the device before storing.**ANY TWO OF THE ABOVE** (2)
- 1.7
  - Drill a hole in the wall. ✓
  - Insert the plastic plug into the hole. ✓
  - Align the hole in the bracket with the hole in the wall, and fasten the screw. ✓ (3)  
**[20]**

**QUESTION 2: GRAPHICS AS MEANS OF COMMUNICATION (GENERIC)**

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| NO. | QUESTION                                                                                                                             | ANSWER                                                                                                  | MARKS |
|-----|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-------|
| 1   | Identify the elevation in FIGURE A.                                                                                                  | South Elevation ✓                                                                                       | 1     |
| 2   | Describe the type of house that is indicated in FIGURE A.                                                                            | Double-storey house/Building/Multi-storey building ✓                                                    | 1     |
| 3   | Identify number 1.                                                                                                                   | Ridge Capping/Ridge tile/Ridge plate/Ridge ✓                                                            | 1     |
| 4   | Identify number 3.                                                                                                                   | Fascia board ✓                                                                                          | 1     |
| 5   | Identify number 4.                                                                                                                   | Overhang/Eave/Dimension line ✓                                                                          | 1     |
| 6   | Identify the fastener indicated by number 5.                                                                                         | Holder bat/Clamp/Clip ✓                                                                                 | 1     |
| 7   | Identify number 6.                                                                                                                   | Window/Window frame/Casement/Casement frame ✓                                                           | 1     |
| 8   | Identify number 7.                                                                                                                   | Shoe/Down pipe outlet/Spout ✓                                                                           | 1     |
| 9   | Identify number 8.                                                                                                                   | Natural ground level/NGL ✓                                                                              | 1     |
| 10  | What does <i>DPM</i> stands for, as indicated in the notes?                                                                          | Damp proof membrane ✓                                                                                   | 1     |
| 11  | Identify number 10.                                                                                                                  | Built-in cupboard/BIC ✓                                                                                 | 1     |
| 12  | Recommend a suitable material that can be used for the manufacturing of number 2 in FIGURE A.                                        | Fibre cement/Galvanised sheeting/Sheet metal/Timber/Wood/Plastic/Fibre glass/Aluminium sheeting ✓       | 1     |
| 13  | Name the TWO elevations on which number 2 is installed.                                                                              | West elevation ✓<br>East elevation ✓                                                                    | 2     |
| 14  | Describe the purpose of number 3.                                                                                                    | The gutter is fixed against it. ✓<br>It finishes off the roof.<br>Protect roofs/rafters from rainwater. | 1     |
| 15  | Deduce ONE feature that has been omitted from the elevation in FIGURE A.                                                             | Step missing at the door ✓<br>Sill missing at the window                                                | 1     |
| 16  | Recommend any TWO sanitary fitments carrying waste water other than a bath that can be installed in the room indicated by number 11. | Wash basin/Wash hand basin/Hand basin/Basin/WB/WHB/HB ✓<br>Shower/SH ✓                                  | 2     |

|    |                                                                                                                      |                                                                                                                                                                                                                                                                                        |   |
|----|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 17 | What sanitary fixture carrying soil water can be installed in the room indicated by number 12?                       | Water closet/WC ✓<br>Bidet/BT                                                                                                                                                                                                                                                          | 1 |
| 18 | Describe the error that appears at number 6 in the elevation in FIGURE A.                                            | The two side windows are opening to the wrong sides/No window sill/The window drawn in FIGURE A is not the same as that in the window schedule/Window opening. ✓                                                                                                                       | 1 |
| 19 | State the reference code for this plan.                                                                              | QP 4 - 2020 ✓                                                                                                                                                                                                                                                                          | 1 |
| 20 | Which room will number 13 serve?                                                                                     | Bedroom 2 ✓                                                                                                                                                                                                                                                                            | 1 |
| 21 | What does the line between numbers 13 and 14 represent?                                                              | Electrical wiring/cable/Wiring/Wiring from light switch to light/Shows which switch operates which electrical fitting/Electrical connection                                                                                                                                            | 1 |
| 22 | Differentiate between number 15 in FIGURE B and number 17 in the notes.                                              | 15: Single tube fluorescent light. ✓<br>17: Double/ tube fluorescent light. ✓<br>15: Will use less electricity/Watt than 17/<br>15: Will provide less light than 17/<br>15: Running cost will be cheaper than 17.<br>15: Has one tube/ 1 x 40 Watt.<br>17: Has two tubes/ 2 x 40 Watt. | 2 |
| 23 | Explain the installation of brick force from the top of the window to the wall plate, as indicated by the architect. | Brick force must be installed between every course above the window up to wall plate. ✓                                                                                                                                                                                                | 1 |
| 24 | Recommend a possible finish for the outside walls of the house.                                                      | Face bricks ✓<br>Plaster and paint/Plaster/Paint/Plaster finish (Smooth finish/Splatter finish/Wavy finish/Bagging finish)<br>Cladding/Tiling                                                                                                                                          | 1 |
| 25 | Deduce from FIGURE 2 which elevation does NOT have windows.                                                          | East elevation ✓                                                                                                                                                                                                                                                                       | 1 |
| 26 | Deduce the thickness of the external wall from FIGURE 2.                                                             | 220 mm ✓                                                                                                                                                                                                                                                                               | 1 |
| 27 | Name a material that can be used to close the open sides of number 16.                                               | Wood/Timber/Stainless steel/Mild steel/Steel/Aluminium/Glass/Perspex ✓                                                                                                                                                                                                                 | 1 |
| 28 | Name the town in which the proposed dwelling will be build.                                                          | Cradock ✓                                                                                                                                                                                                                                                                              | 1 |

|    |                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                |           |
|----|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 29 | Calculate the area of the bathroom. Show ALL calculations. Give your answer in m <sup>2</sup> .                                            | $\begin{aligned} & \ell \times b \\ & = 2 \checkmark \text{ m} \times 2 \text{ m} \checkmark \text{ OR } 2\,000 \text{ mm} \times 2\,000 \text{ mm} \\ & = 4 \text{ m}^2 \checkmark \qquad \qquad \qquad = 4 \text{ m}^2 \end{aligned}$                                                                                                                        | 3         |
| 30 | Calculate the total length of the wall on the eastern side of the building. Show ALL calculations. The length must be indicated in metres. | $\begin{aligned} & 220 \checkmark + 3\,000 \checkmark + 110 \checkmark \\ & \quad \quad \quad \underbrace{\hspace{1cm}} \\ & + 1\,400 + 110 + 2\,000 \checkmark + 220 \checkmark \\ & = 7\,060 \text{ mm} \\ & = 7,06 \text{ m} \checkmark \\ & \text{OR} \\ & 220 + 3\,000 + 110 + 3\,510 + 220 \\ & = 7\,060 \text{ mm} \\ & = 7,06 \text{ m} \end{aligned}$ | 6         |
|    |                                                                                                                                            | <b>TOTAL:</b>                                                                                                                                                                                                                                                                                                                                                  | <b>40</b> |

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

3.1 Give ONE term for the following descriptions:

3.1.1 Quadrant ✓ (1)

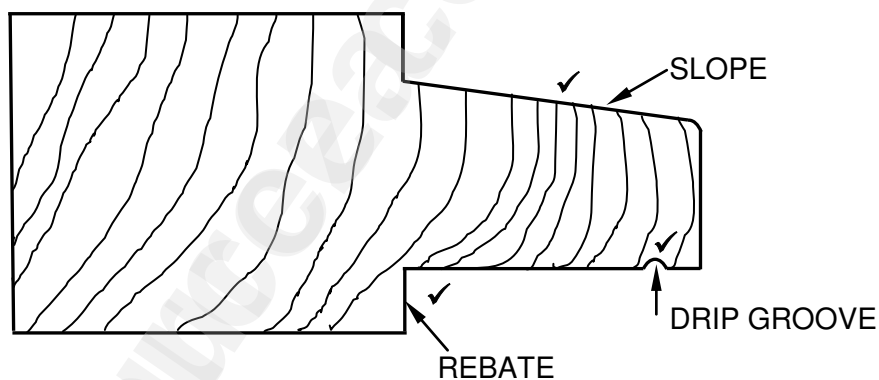
3.1.2 Mullion ✓ (1)

3.1.3 Putty ✓ (1)

3.1.4 Tongue-and –groove ✓ (1)

3.1.5 Top rail ✓ (1)

3.2

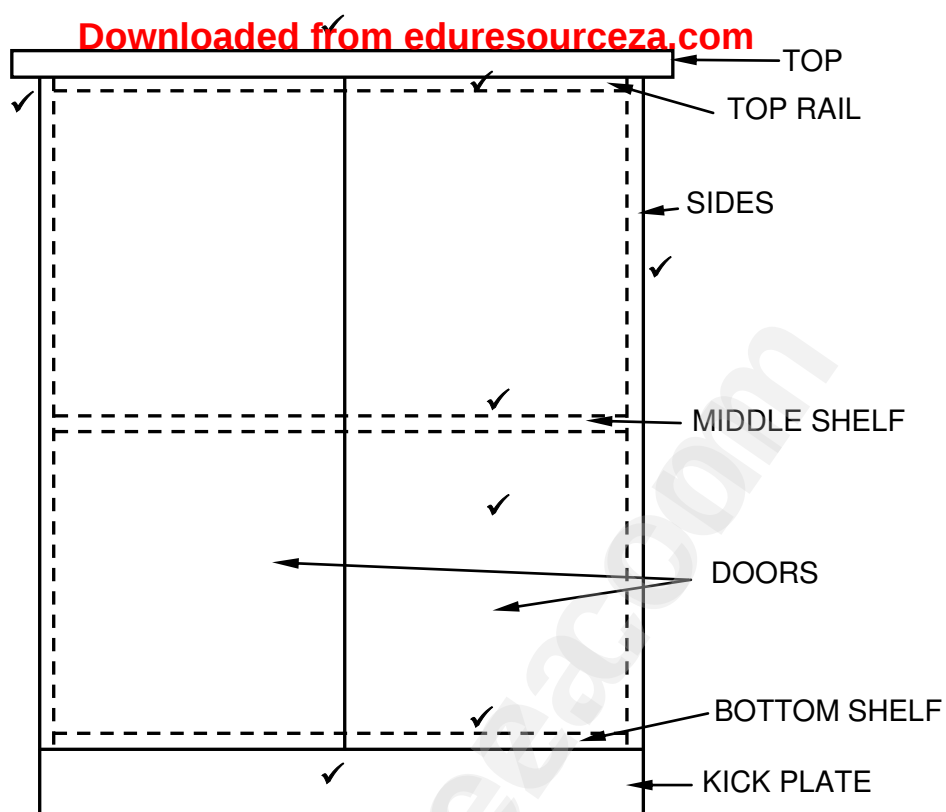


Correctness of drawing ✓

| ASSESSMENT CRITERIA    | MARK     |
|------------------------|----------|
| Rebate                 | 1        |
| Drip groove            | 1        |
| Slope                  | 1        |
| Correctness of drawing | 1        |
| <b>TOTAL:</b>          | <b>4</b> |

(4)

3.3



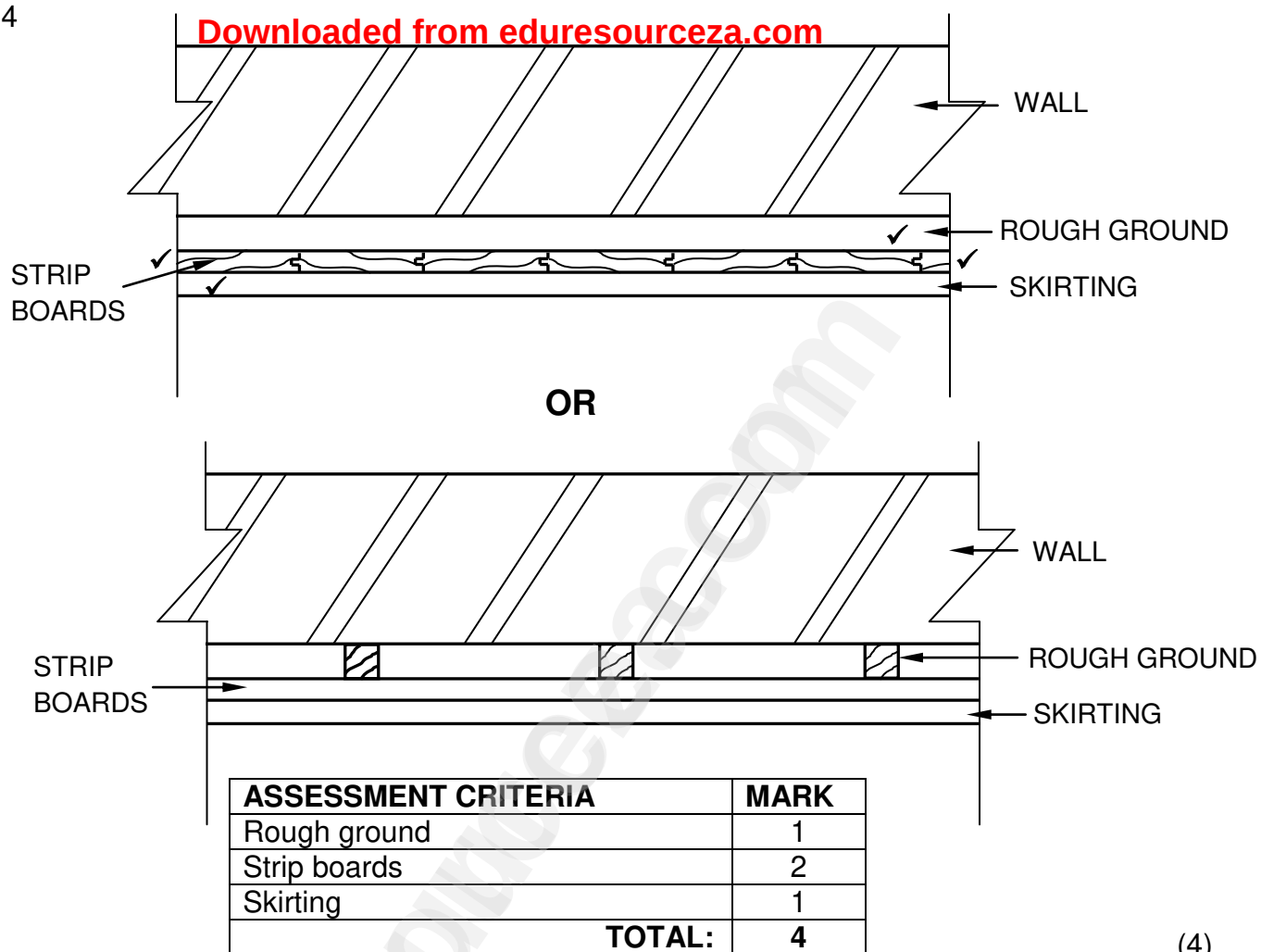
Correctness of drawing ✓

| ASSESSMENT CRITERIA                  | MARK     |
|--------------------------------------|----------|
| Kick plate                           | 1        |
| Sides                                | 1        |
| Top rail                             | 1        |
| Bottom shelf                         | 1        |
| Top 32 mm thick                      | 1        |
| Top overhang 30 mm on either side    | 1        |
| Middle shelf                         | 1        |
| Doors                                | 1        |
| Correctness of drawing/Scale drawing | 1        |
| <b>TOTAL:</b>                        | <b>9</b> |

(9)

THE SIDES CAN ALSO BE INDICATED IN DARK LINES IF THE DOORS ARE FITTED BETWEEN THE SIDES

3.4



3.5.1

| A | B | C | D                                                                |
|---|---|---|------------------------------------------------------------------|
|   |   |   | <b>LENGTH OF FASCIA BOARD NEEDED</b>                             |
|   |   |   |                                                                  |
|   |   |   | <b>LENGTH OF THE ROOF</b>                                        |
|   |   |   | $230 + 12\,000 + 230$                                            |
|   |   |   | $= 12\,460\text{ mm} \checkmark$                                 |
|   |   |   |                                                                  |
|   |   |   | <b>WIDTH OF THE ROOF</b>                                         |
|   |   |   | $230 + 6\,000 + 230$                                             |
|   |   |   | $= 6\,460\text{ mm} \checkmark$                                  |
|   |   |   |                                                                  |
|   |   |   | <b>TOTAL LENGTH OF FASCIA BOARD NEEDED</b>                       |
|   |   |   | $2(12\,460 + 6\,460) \checkmark$                                 |
|   |   |   | $= 37\,840\text{ mm} \checkmark$                                 |
|   |   |   | OR                                                               |
|   |   |   | $= 37,84\text{ m}$                                               |
|   |   |   |                                                                  |
|   |   |   | <b>LENGTH OF SKIRTING NEEDED</b>                                 |
|   |   |   |                                                                  |
|   |   |   | <b>INSIDE LENGTH OF WALL</b>                                     |
|   |   |   | $12\,000 - 220 - 220$                                            |
|   |   |   | $= 11\,560\text{ mm} \checkmark$                                 |
|   |   |   |                                                                  |
|   |   |   | <b>INSIDE WIDTH OF WALL</b>                                      |
|   |   |   | $6\,000 - 220 - 220$                                             |
|   |   |   | $= 5\,560\text{ mm} \checkmark$                                  |
|   |   |   |                                                                  |
|   |   |   |                                                                  |
|   |   |   | <b>TOTAL LENGTH OF SKIRTING NEEDED</b>                           |
|   |   |   | $2(11\,560 + 5\,560) - 10\,000\text{ (door opening)} \checkmark$ |
|   |   |   | $= 24\,240\text{ mm} \checkmark$                                 |
|   |   |   | OR                                                               |
|   |   |   | $= 24,24\text{ m}$                                               |

(4)

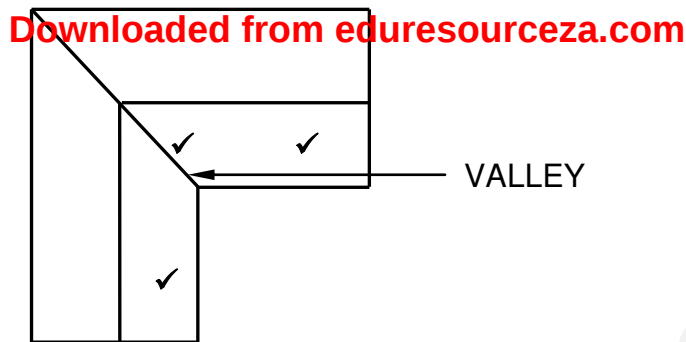
3.5.2

(4)  
[30]

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

- 4.1 4.1.1 Belt sander/Portable belt sander ✓ (1)
- 4.1.2 If no personal safety equipment is worn:  
• Dust and debris can cause eye and body injuries. ✓  
• Dust may damage your lungs. ✓  
• Dust and debris may damage clothes.  
• Loose clothing can be caught in moving parts of the machine and cause injury.  
**ANY TWO OF THE ABOVE** (2)
- 4.1.3 Prevent machine from being damaged by:  
• corrosion/rust/dust/dirt ✓  
• moisture.  
**ANY ONE OF THE ABOVE** (1)
- 4.2 4.2.1 Adjusting the height of the table of the thickness planer while in operation:  
• Can cause injury to the operator. ✓  
• Can cause the wood to get stuck in the thickness planer. ✓  
• Can put unnecessary strain on the thickness planer.  
• Thickness planer will stop working.  
• Thickness planer can be damaged.  
**ANY TWO OF THE ABOVE** (2)
- 4.2.2 • Ensure that timber is free from metal objects before planing commenced. ✓  
• Make sure the blades are sharp. ✓  
• Ensure that the blade is properly fastened.  
**ANY TWO OF THE ABOVE** (2)
- 4.3 Different types of roof underlay:
- 4.3.1 Polypropylene/Plastic membrane ✓ (1)
- 4.3.2 Aluminium foil or any other fireproof material ✓ (1)
- 4.3.3 A synthetic/plastic membrane or metal waterproofing membrane ✓ (1)

4.4



| ASSESSMENT CRITERIA   | MARK     |
|-----------------------|----------|
| Inclined roof on top  | 1        |
| Valley                | 1        |
| Inclined roof on left | 1        |
| <b>TOTAL:</b>         | <b>3</b> |

(3)

4.5 Eaves are closed because:

- it provides a more attractive finish. ✓
- it prevents birds from nesting in the roof.
- beam filling is not compulsory.

**ANY ONE OF THE ABOVE**

(1)

4.6 Fibre cement board is water resistant. ✓

(1)

4.7 4.7.1 Concrete roof tiles are:

- quite prone to chemical weathering. ✓
- fragile and must be handled with care. ✓
- heavier than most other roofing materials.
- not always uniform in colour.
- not able to resist extreme weather conditions.
- more expensive.
- more labour intensive.
- porous at times.

**ANY TWO OF THE ABOVE**

(2)

4.7.2 Thatch roofs:

- are extremely vulnerable to fire and must be treated with fire proof chemicals before use. ✓
- are more expensive to install than other roof covering. ✓
- demands more maintenance.
- are susceptible to decay because thatch is an organic material.
- need re-thatching of the ridge capping every four to six years.

**ANY TWO OF THE ABOVE**

(2)

- 4.7.3 Corrugated roof sheeting:
- Sharp edges can be dangerous. ✓
  - If sheets are too thin, they may bend when stepped upon. ✓
  - The sheets can rust along the edges if they have been cut using an angle grinder.

**ANY TWO OF THE ABOVE**

(2)

- 4.8 The trapdoor framework must be secured to the:

- Tie beam ✓
- Branderling ✓

(2)

- 4.9 Mechanical graded timber:

- Indicates the quality/strength of timber. ✓
- Undergone mechanical tests using machines. ✓
- Machine stress- grading is highly effective and more accurate than visual grading.
- It provides a reliable and consistent method of grading timber.
- Mechanically graded timber is most commonly used in engineered connector plate roof trusses.
- Mechanically graded timber is easily available because the process is faster.

**ANY TWO OF THE ABOVE**

(2)

- 4.10 Timber must be preserved:

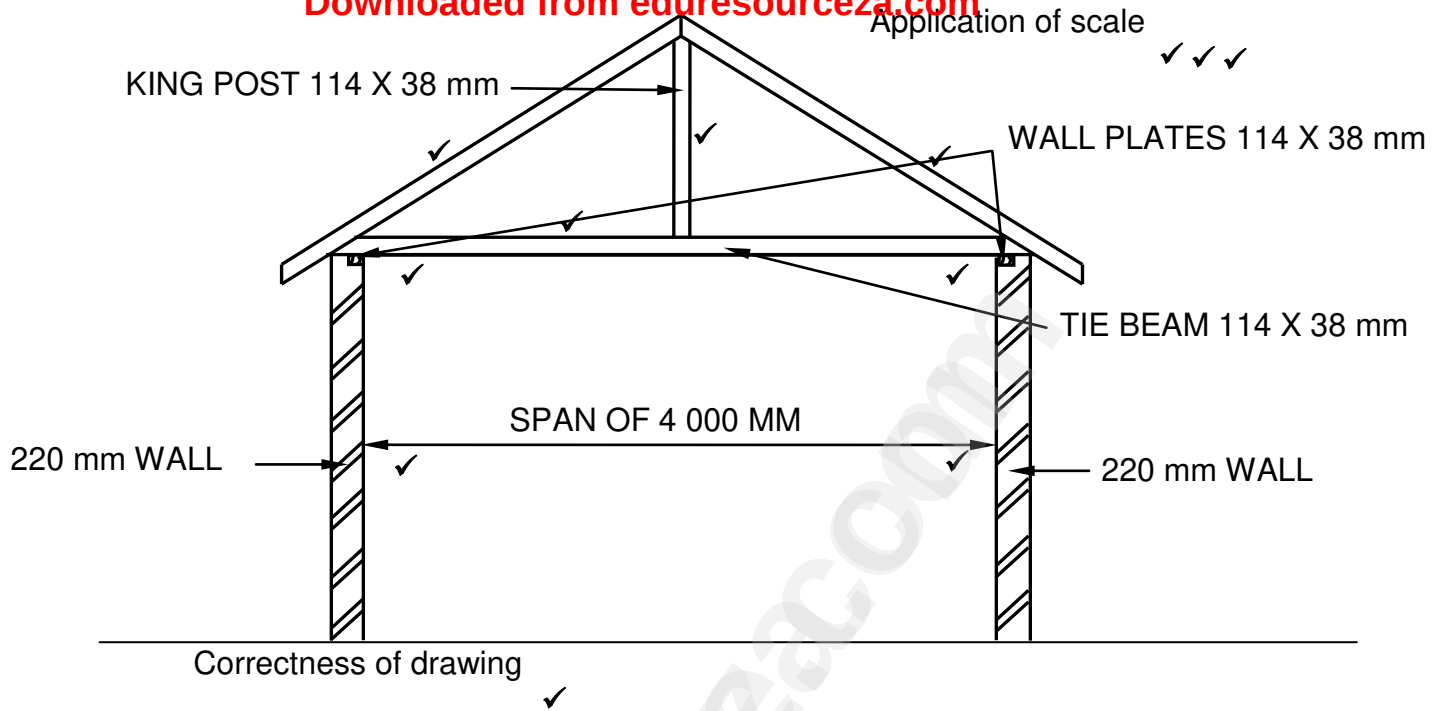
- to enhance the appearance of timber. ✓
- to prevent fungi growth. ✓
- to prevent fungal discolouration of timber.
- to prevent insect attacks.
- to protect it from the elements of the nature.
- to prevent shrinkage and warping.
- so that projects have a tough, durable, water-resistant and clear finish.
- to bring out the grain of the timber.
- to make it resistant to water, heat, stains and scratches.
- extend the lifespan of the timber.
- because it takes time to decay.

**ANY TWO OF THE ABOVE**

(2)

4.11

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| ASSESSMENT CRITERIA                       | MARK      |
|-------------------------------------------|-----------|
| 220 mm walls with inside span of 4 000 mm | 2         |
| Wall plates 114 x 38 mm                   | 2         |
| Tie beam 114 x 38 mm                      | 1         |
| Rafters 114 x 38 mm                       | 2         |
| King post 114 x 38 mm                     | 1         |
| Correctness of drawing                    | 1         |
| Application of scale                      | 3         |
| ONE or TWO incorrect = 3                  |           |
| THREE or FOUR incorrect = 2               |           |
| More than FIVE incorrect = 1              |           |
| NO measurements correct = 0               |           |
| <b>TOTAL:</b>                             | <b>12</b> |

(12)  
[40]

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

- 5.1 A – Rib ✓  
 B – Tie/Opening between ribs ✓  
 C – Lagging ✓  
 D – Bearer ✓  
 E – Horizontal brace/Strut ✓ (5)

- 5.2 An adjustable steel prop is preferred because...  
 • it is stronger than a wooden prop. ✓  
 • it can be adjusted much easier than a wooden prop.  
 • it can provide a much more accurate height adjustment during installation.  
**ANY ONE OF THE ABOVE** (1)

- 5.3 5.3.1 Double flying shore/Flying shore/Raking shore ✓ (1)

- 5.3.2 A – Folding wedges:  
 Allow the raising or lowering of the dead shore to the required height. ✓ (1)

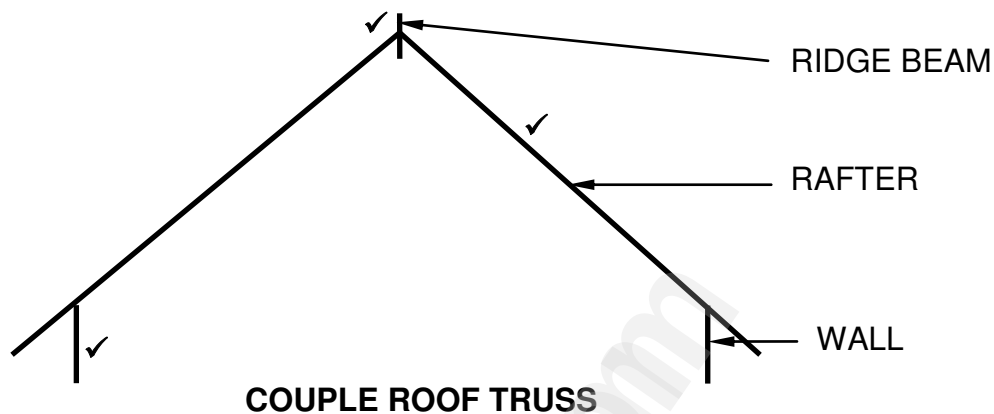
- 5.3.3 Steel dogs:  
 • are used to secure the joint between soleplate/needle and dead shore. ✓  
 • help to keep the construction more rigid/stable/firm.  
**ANY ONE OF THE ABOVE** (1)

5.4

| No | Mistakes in the construction of the dead shore                       | Possible solutions to rectify the mistakes                            |
|----|----------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1  | The needle is not secured by means of a steel dog ✓                  | Secure with steel dog. ✓                                              |
| 2  | The dead shores have no soleplates. ✓                                | Sole plates should be installed at the bottom of the dead shores. ✓   |
| 3  | No folding wedges.                                                   | Folding wedges should be placed under the dead shores.                |
| 4  | The needle do not rest properly on the dead shore on the right side. | Move dead shore to the left and secure needle properly on dead shore. |
| 5  | Needle is not level.                                                 | Set needle level.                                                     |
| 6  | No brace between the needle and the dead shore.                      | Secure a brace between the needle and dead shore.                     |

**ANY TWO MISTAKES WITH THE CORRESPONDING SOLUTIONS OF THE ABOVE OR ANY OTHER** (4)

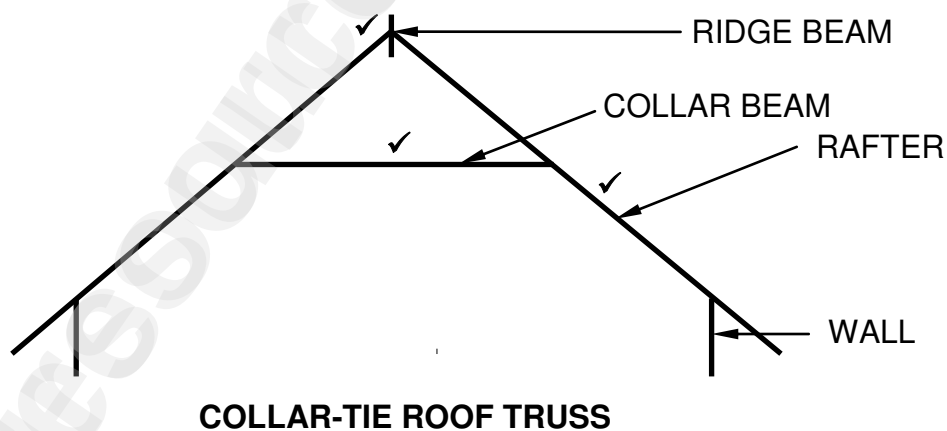
- 5.5 Differentiate between a couple roof truss and a collar-tie roof truss.



Correctness of drawing ✓

| <b>ASSESSMENT CRITERIA – COUPLE ROOF</b> |  | <b>MARK</b> |
|------------------------------------------|--|-------------|
| Walls                                    |  | 1           |
| Rafters                                  |  | 1           |
| Ridge beam                               |  | 1           |
| Correctness of drawing                   |  | 1           |
| <b>TOTAL:</b>                            |  | <b>4</b>    |

(4)



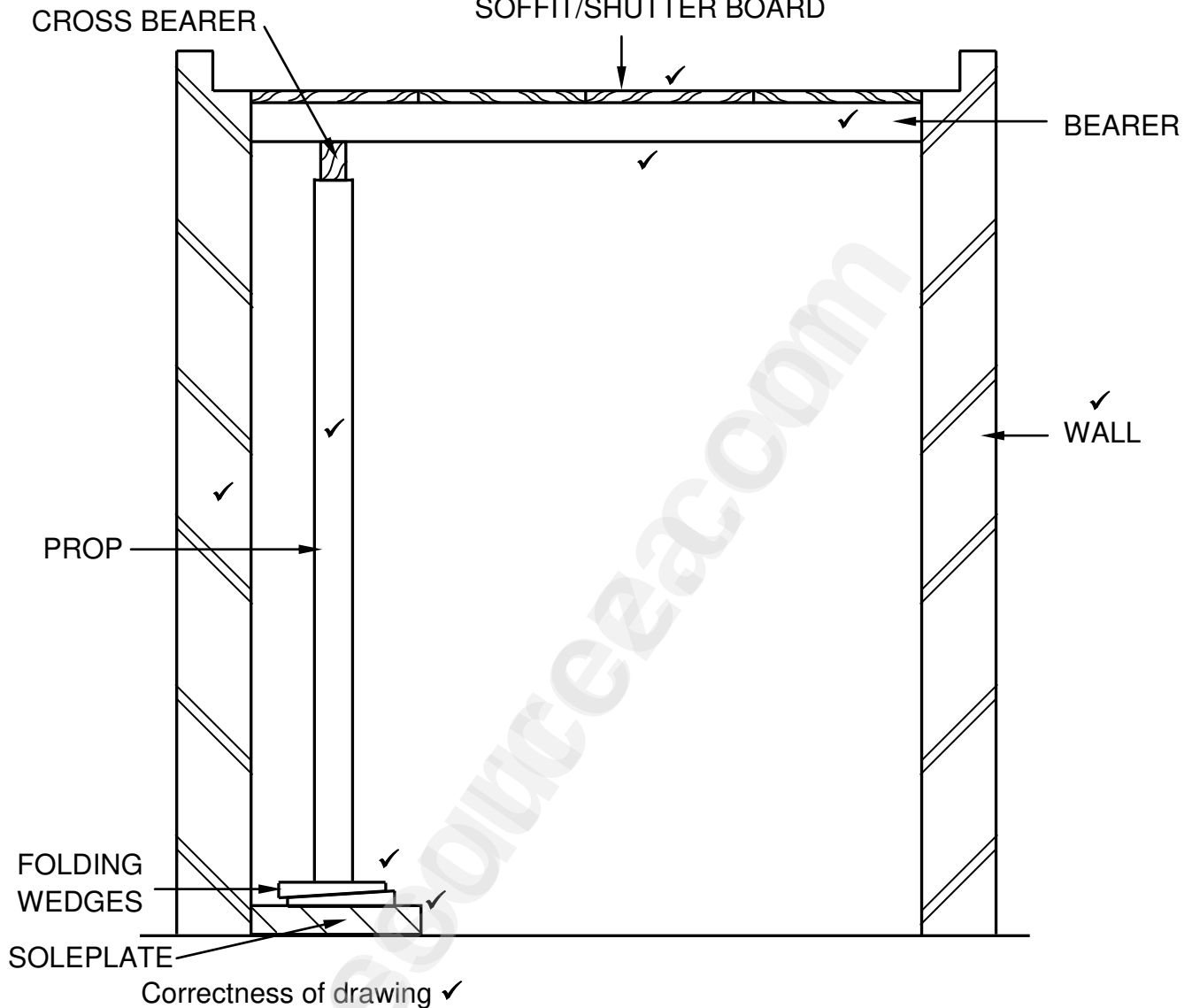
Correctness of drawing ✓

| <b>ASSESSMENT CRITERIA – COLLAR-TIE ROOF</b> |  | <b>MARK</b> |
|----------------------------------------------|--|-------------|
| Rafters                                      |  | 1           |
| Collar beam                                  |  | 1           |
| Ridge beam                                   |  | 1           |
| Correctness of drawing                       |  | 1           |
| <b>TOTAL:</b>                                |  | <b>4</b>    |

(4)

5.6

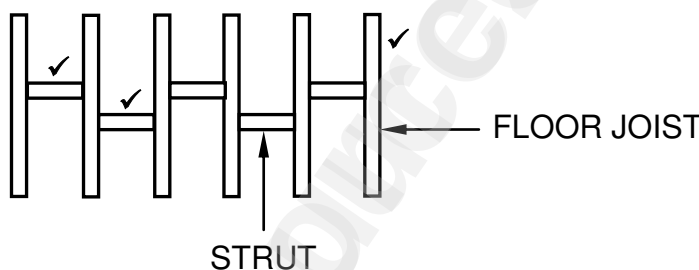
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| ASSESSMENT CRITERIA    | MARK     |
|------------------------|----------|
| Soffit/Shutter board   | 1        |
| Bearer                 | 1        |
| Cross bearer           | 1        |
| Prop                   | 1        |
| Folding wedges         | 1        |
| Soleplate              | 1        |
| Any TWO labels         | 2        |
| Correctness of drawing | 1        |
| <b>TOTAL:</b>          | <b>9</b> |

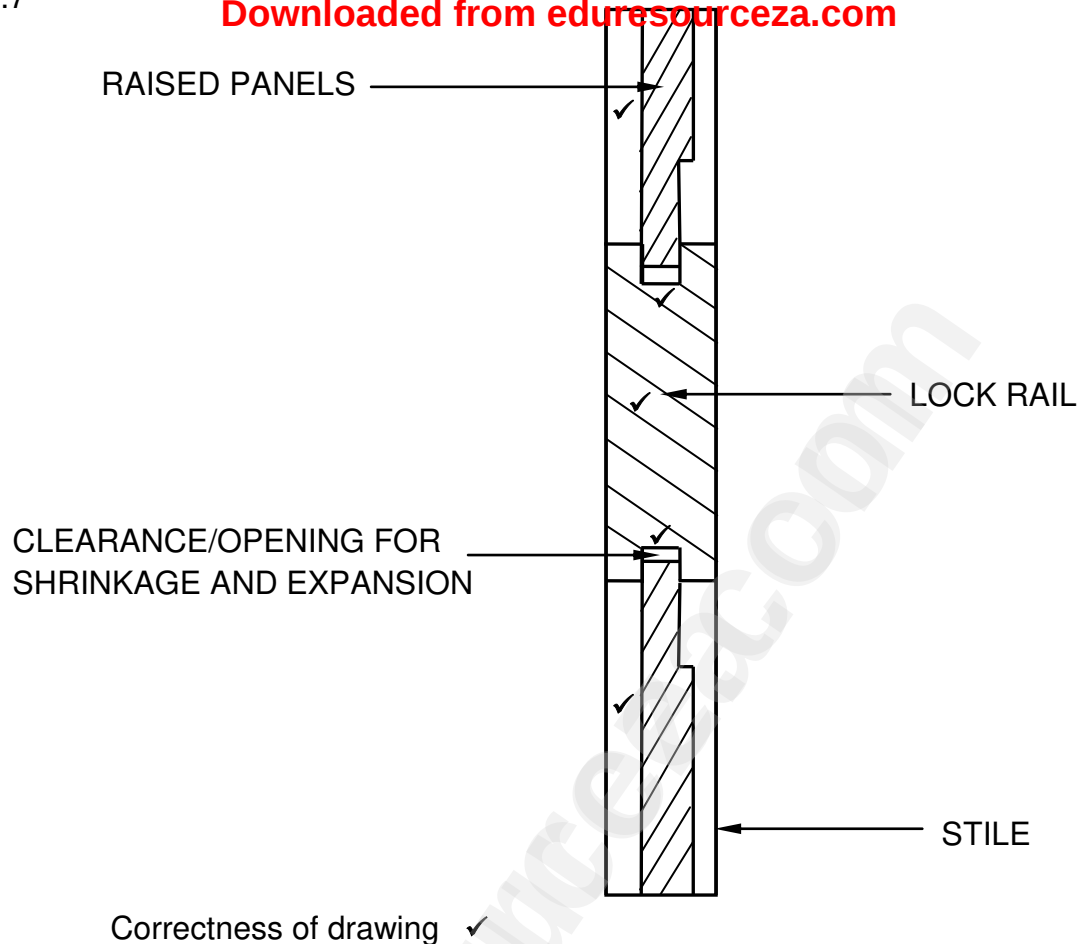
(9)  
[30]

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

- 6.1      6.1.1      B ✓ (1)
- 6.1.2      A ✓ (1)
- 6.1.3      D ✓ (1)
- 6.1.4      C ✓ (1)
- 6.1.5      D ✓ (1)
- 6.2      A - Wall plate ✓  
B - Floor joist ✓  
C - Brick pier ✓  
D - Bearer ✓ (4)
- 6.3      The concrete base must be wider than the brick pier in order to distribute the load imposed on it to the ground. ✓ (1)
- 6.4       (3)
- 6.5      Ant guards are made from galvanized steel so that it will not rust or corrode. ✓ (1)
- 6.6      • Cut cupboard – bolts move in a horizontal direction. ✓  
• Drawer/till locks – bolts move in a vertical position. ✓ (2)

6.7

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| ASSESSMENT CRITERIA                           | MARK     |
|-----------------------------------------------|----------|
| Raised panels                                 | 2        |
| Lock rail                                     | 1        |
| Clearance/opening for shrinkage and expansion | 2        |
| Correctness of drawing                        | 1        |
| <b>TOTAL:</b>                                 | <b>6</b> |

(6)

6.8

- A - Haunch ✓
- B - Rail/Top rail ✓
- C - Open tenon/Tenon ✓
- D - Stile ✓

(4)

6.9

6.9.1

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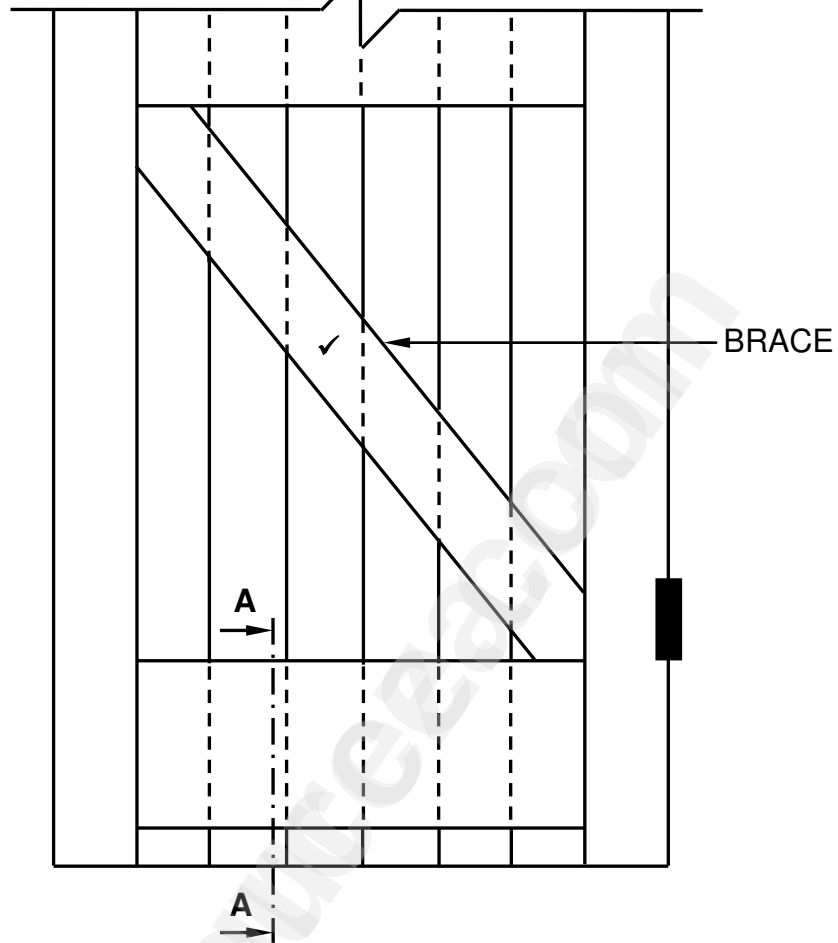
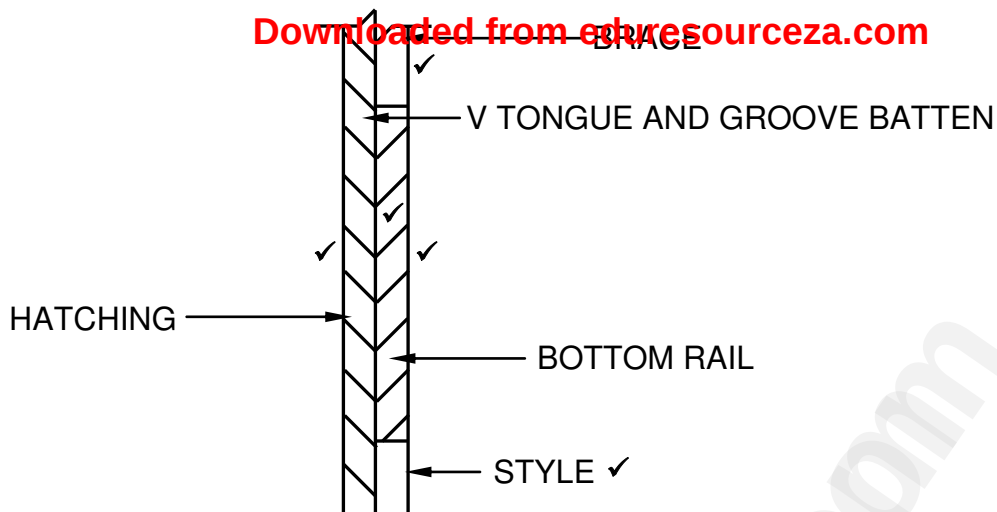


FIGURE 6.9

| ASSESSMENT CRITERIA | MARK     |
|---------------------|----------|
| Brace               | 1        |
| <b>TOTAL:</b>       | <b>1</b> |

(1)

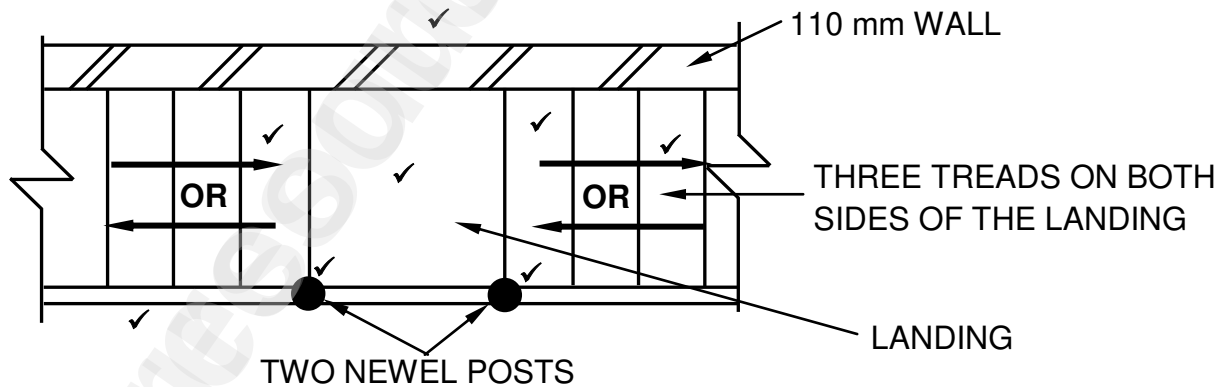
6.9.2

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| ASSESSMENT CRITERIA        | MARK     |
|----------------------------|----------|
| V tongue and groove batten | 1        |
| Brace                      | 1        |
| Bottom rail                | 1        |
| Hatching                   | 1        |
| Arrow indicating the style | 1        |
| <b>TOTAL:</b>              | <b>5</b> |

(5)

6.10



| ASSESSMENT CRITERIA                          | MARK     |
|----------------------------------------------|----------|
| 110 mm wall                                  | 1        |
| Three treads on both sides of the landing    | 2        |
| Landing                                      | 1        |
| Handrail                                     | 1        |
| TWO newel posts                              | 2        |
| Arrow – indicating the rise of the staircase | 1        |
| <b>TOTAL:</b>                                | <b>8</b> |

(8)

[40]

**TOTAL: 200**