These marking guidelines consist of 19 pages.
QUESTION 1: CONSTRUCTION, SAFETY AND MATERIALS

1.1 • Never use unsafe supports such as step ladders, drums, loose bricks, or crates on the scaffolding. √
• The worker should have worn a safety harness/safety rope. √
• The worker should ensure that there are sufficient guard rails on the scaffolding.
• Always wear protective clothing when working on scaffolding/non slip safety footwear.
• The worker should ensure that the area is free of liquids and obstacles. (2)

ANY TWO OF THE ABOVE

1.2 • To prevent electric shock. √
• To keep the power tools in a working condition.
• To ensure the safety of the user.
• Live exposed wires can cause electrocution or fire. (1)

ANY ONE OF THE ABOVE

1.3 • The worker can be injured by the moving blade. √
• Measuring tools/tools may be damaged when touching the moving blade.
• Moving parts of the machine can be damaged (1)

ANY ONE OF THE ABOVE

1.4 • Tamping rod/rod √
• Cone/frustum/mould √
• Base plate/waterproof base √
• Folding ruler, tape measure, steel ruler/level/straight edge
• Shovel (3)

ANY THREE OF THE ABOVE

1.5 • Concrete mixer/machine mixed √
• Ready mixed concrete (1)

ANY ONE OF THE ABOVE

1.6 1.6.1 B √ (1)
1.6.2 C √ (1)
1.6.3 D √ (1)
1.6.4 F/M √ (1)
1.6.5 G √ (1)
1.6.6 J √ (1)
1.6.7 L √ (1)
1.6.8 I (1)
1.6.9 H (1)
1.6.10 A (1)

1.7 1.7.1

1.7.2 PLAN COURSE OF A QUOIN IN ENGLISH BOND/CORNER BUILT IN ENGLISH BOND

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>MARK</th>
<th>CANDIDATE’S MARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stretcher course</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Corner brick</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Queen closer</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Header course</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>4</strong></td>
<td></td>
</tr>
</tbody>
</table>

1.7.3
- The queen closer creates the bond in the wall/quarter lap. (1)
- The queen closer closes the gap in the wall in the header course.
- The queen closer prevents a straight vertical mortar joint.

ANY ONE OF THE ABOVE (1)

1.8

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>MARK</th>
<th>CANDIDATE’S MARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supporting walls</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Roof</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>2</strong></td>
<td></td>
</tr>
</tbody>
</table>
1.9 1.9.1
- A brush/sponge can be used to apply paint to a ceiling.
- A roller can be used to apply paint to a ceiling.
- A spray gun/spray-painting equipment can be used to apply paint to a ceiling.
- A sponge can be used to apply paint to a ceiling.

ANY ONE OF THE ABOVE

1.9.2
- Painting it with a brush will avoid fine paint spray on the walls and the floors.
- Using a roller will be quicker than using a brush/prevent stripes.
- Spray painting will be quicker than painting with a brush and a roller.

A sponge can be used for the decorative application of paint.

- ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER

1.10 1.10.1 Skirting/tile skirting

1.10.2 Cornice

ANY SUITABLE MATERIAL INDICATED FOR THE MANUFACTURING OF THE ABOVE COMPONENTS WILL BE ACCEPTED.
QUESTION 2: ADVANCED CONSTRUCTION AND EQUIPMENT

2.1 2.1.1 D ✓

2.1.2 B ✓

2.1.3 B ✓

2.1.4 D ✓

2.1.5 C ✓

2.2 2.2.1 Dumpy level/surveying instrument/levelling instrument ✓

2.2.2 • To measure vertical and horizontal heights/levels ✓
    • To measure vertical and horizontal angles
    • To measure distances
    • It is used for surveying/setting out of buildings.

ANY ONE OF THE ABOVE

2.2.3 Tripod/baseplate ✓

2.2.4 Telescopic staff/levelling rod ✓

2.2.5 • To prevent it from getting damaged and wet. ✓
    • To protect the instrument against dust/moisture/bumps/sun
    • It is fragile.

ANY ONE OF THE ABOVE

2.3 2.3.1 Rib and block concrete ✓

2.3.2 A – Concrete floor slab/concrete/slab. ✓
    B – Concrete hollow block/rib block/block ✓
    C – Reinforced steel mesh/reinforcement bars/bars ✓

2.3.3 • The rib and block method can be used anywhere, even in water. ✓
    • Components are precast, thus it saves a lot of building time.
    • Placing is relatively quick.
    • Provides excellent resistance against soil movement.
    • Work can proceed, despite the weather conditions.
    • Plastering the underside of the floor can take place without any delays.
    • No extensive formwork or shuttering is necessary.
    • It is approximately 30% lighter than in situ floor slabs.
    • No skilled labour is required as the supply company also does the installation.
    • It is cheaper.
    • Less quantity of material is used.

ANY ONE OF THE ABOVE
2.4  2.4.1  A - Wall tie ✓  
B - Damp proof course/DPC ✓  

2.4.2  • Under the window sill ✓  
• Under floor slab/Between the sub- and super structure  
• At the base of external and internal walls  
• Vertically at jambs or door frames  
• Roof/parapet wall  
• Above the lintel of a cavity wall  

ANY ONE OF THE ABOVE  

2.4.3  The cavity in the walls are to:  
• prevent rain water from penetrating the inner skin of the wall. ✓  
• provide high insulation against heat, cold and sound. ✓  
• enable the use of cheaper or alternative materials for inner skin of the wall. ✓  

ANY ONE OF THE ABOVE  

2.5  Intrados – Is the inner surface of arches ✓  
Extrados – Is the outer surface of arches ✓  

2.6  2.6.1  Cube/Cube mould/Mould ✓  
ANY ONE OF THE ABOVE  

2.6.2  Tamping rod/Rod/Trowel/Shovel ✓  
ANY ONE OF THE ABOVE  

2.6.3  Cube test ✓  

2.6.4  • The test is done to determine the compressive strength/crushing strength of concrete. ✓  
• Test the strength of concrete. ✓  

ANY ONE OF THE ABOVE
2.7

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>MARK</th>
<th>CANDIDATES MARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shear bar correctly drawn</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Stirrups correctly drawn and spaced</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>2</td>
<td>(2)</td>
</tr>
</tbody>
</table>

2.8

2.8.1 Twisted ribbed bar √

2.8.2 Ribbed bar √ (2)

2.9

2.9.1
- Wooden planks/timber √
- Block board
- Laminated board
- Shutter board
- Plywood boards
- Metal shutter

ANY ONE OF THE ABOVE (1)

2.9.2
- B – Wedges √
- C – Yoke √
- D – Clamp/Cleat √
- E – Threaded rod/bolt and nut/bolt √ (4)

2.9.3
- The yokes will not be tightened/Yokes will not be able to be joined. √
- The formwork will not be kept in place/collapse.
- The formwork will not be square.
- The yokes will not be in place.
- The formwork will not be rigid.
- Concrete will escape from the corners of the formwork.

ANY ONE OF THE ABOVE (1)
2.10

- There is insufficient soundproofing √
- There is less insulation against cold and heat
- It cannot be use externally
- The dry wall can easily be damaged/burnt
- The dry wall cannot carry heavy loads

ANY ONE OF THE ABOVE

2.11

ASSESSMENT CRITERIA | MARK | CANDIDATES MARK
---------------------|------|---------------------
Cladding correctly drawn | 1 | | 
Cornice/moulding at ceiling correctly drawn | 1 | | 
Skirting/quadrant at floor correctly drawn | 1 | | 
TOTAL | 3 | | 

2.12

- Preformed concrete piles √
- Steel tube caisson piles
- Driven in-situ piles
- Short bored piles

ANY ONE OF THE ABOVE

[40]
QUESTION 3: CIVIL SERVICES

3.1  3.1.1  S – trap √ (1)

3.1.2  To prevent sewer-gas (foul air) from the sewerage system to enter the building. √ (1)

3.2  • The season/Cloud cover/weather conditions √
• Time of day √
• Duration of sunshine
• Cleanliness of glass panel
• Shadows over glass panels
• The intensity of direct sunlight
• The position/orientation of the panel to north
• Pitch of the panel
• The type of solar heater/panel

ANY TWO OF THE ABOVE (2)

3.3  3.3.1  Heating element/Element √ (1)

3.3.2  • The cold water inlet is placed at the bottom of the geyser so that the incoming cold water does not mix with the hot water/incoming cold water heated by the element. √
• The hot water outlet is placed at the top to discharge hot water which is concentrated at the top of the geyser. √ (2)

OR ANY OTHER ACCEPTABLE ANSWER

3.3.3  Temperature and pressure safety valve/Safety valve/Pressure valve √ (1)

3.4  3.4.1  • The grid receives/drains storm water/allow storm water to enter storm water system/pipe. √
• Water is guided to flow off our roads on to the road kerbs and then into the road channel into the storm water pipes.
• Prevent waste like paper and plastic bags to block the storm water pipes.
• For safety purposes

ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER (1)

3.4.2  • Roads will overflow with storm water. √
• Damage to the roads may be possible because of the storm water.
• Storm water will not be able to enter the grid.
• Storm water will flood surrounding areas

ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER (1)
3.5
- Wind pump ✓
- Submersible water pump ✓
- Water pump
- Manual hand pump/hand pump
- Electric pump
- Solar powered pump

ANY TWO OF THE ABOVE

3.6

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>MARK</th>
<th>CANDIDATES MARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorescent light</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Distribution board</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Double-pole light switch (one-way)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Electric wiring</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

DRAWING SYMBOLS IN TEXTBOOKS FOR ABOVE ITEMS WILL ALSO BE ACCEPTED
### ASSESSMENT CRITERIA

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>MARK</th>
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<tbody>
<tr>
<td>Rodding eye</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Gully</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Ventilation pipe/Vent pipe</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Branch pipes 45°</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Inspection eyes</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Any THREE abbreviations</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>10</strong></td>
<td></td>
</tr>
</tbody>
</table>

(10) [30]
QUESTION 4 QUANTITIES AND CALCULATIONS AND JOINING

4.1  
4.1.1 Chipboard/drywall/counter sunk head screw/pozi drive screw √
Use: Joining fabricated boards/machine made boards/board products/timber √
(2)

4.1.2 Steel cut nail/masonry nail √
Use: Mainly used to fix skirting and cleats to brickwork √

OR

Oval nail
Use: Used at edge of timber to prevent the timber from splitting

OR

Floor nail
Use: Used to secure floor planks
(2)

4.1.3 Sleeve anchor/Rawlbolt √
Use: Fixing objects into concrete and brickwork/to join truss hangers against a wall √
(2)

4.2  
• Wire nails/clamp/hurricane clamps √
(1)

4.3  
• Quicker to drive in than screws √
• Available in a variety of lengths, thicknesses and strengths √
• Various heads for invisible or decorative use
• Cheaper than screws
• Can be made of rust proof material (copper or stainless steel)
• Can be quickly removed
• Tough and resilient
• Can be straightened and reused
• Nails requires a less skilful worker
• Not as time consuming as when inserting screws.
• Application of nails is much faster than screws.
(2)

ANY TWO OF THE ABOVE

4.4  
• Copper pipe/polycop pipes/PVC pipes/Composite pipes √
(1)
4.5  4.5.1  38/38 mm √
4.5.2  3 √
4.5.3  3 374/3 374 mm √
4.5.4  3 600/3 600 mm √
4.5.5  9 600/9 600 mm √
4.5.6  3 600/3 600 mm √
4.5.7  17 250/17 250 mm √
4.6

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Inside measurement of:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long walls  = 7 000 mm – 2/220 mm</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 6 560 mm</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Short walls  = 4 000 mm – 2/220 mm</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 3 560 mm</td>
<td>√</td>
</tr>
<tr>
<td>4/</td>
<td></td>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6,56</td>
<td>Inside area of the room is</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3,56</td>
<td>√</td>
<td>23,35 m²</td>
</tr>
<tr>
<td>1/</td>
<td></td>
<td>(2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4,2</td>
<td>One board is 4 200 mm x 1 200 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,2</td>
<td>√</td>
<td>5,04 m²</td>
</tr>
<tr>
<td>3/</td>
<td></td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Length of skirting:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>= (6 560 + 3 560) x 2</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 20 240</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 17,24 m</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 13 120</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 17 240 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 17,24 m</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 6 560 + 6 560</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 17 240 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>= 17,24 m</td>
<td>√</td>
</tr>
<tr>
<td>4/</td>
<td></td>
<td>(4)</td>
<td></td>
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</tbody>
</table>

IF A CANDIDATE DID NOT USE THE ANSWER SHEET TWO MARKS MUST BE DEDUCTED FROM THE TOTAL
IF A CANDIDATE DID NOT CONVERT TO METRES THE CANDIDATE SHOULD NOT BE PENALISED BUT THE FINAL ANSWER MUST BE IN SQUARE METRES/METRES
IF THE CANDIDATE WROTE THE MEASUREMENTS IN THE WRONG COLUMN ONE MARK MUST BE DEDUCTED FROM THE TOTAL
QUESTION 5: APPLIED MECHANICS

5.1 5.1.1 \((A1 \times d) + (A2 \times d)\)
Total area

\[
\sqrt{\frac{(3 \, 600 \, \text{mm}^2 \times 30 \, \text{mm}) + (675 \, \text{mm}^2 \times 25 \, \text{mm})}{4 \, 275 \, \text{mm}^2}} \sqrt{\frac{4 \, 275 \, \text{mm}^2}{4 \, 275 \, \text{mm}^2}} = \frac{108 \, 000 \, \text{mm}^3 + 16 \, 875 \, \text{mm}^3}{4 \, 275 \, \text{mm}^2} = \frac{124 \, 875 \, \text{mm}^3}{4 \, 275 \, \text{mm}^2} = 29,21 \, \text{mm}\]

OR

<table>
<thead>
<tr>
<th>Part</th>
<th>Area A (A)</th>
<th>X</th>
<th>AX</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>3 600 mm²</td>
<td>30 mm</td>
<td>3 600 mm x 30 mm = 108 000 mm³</td>
</tr>
<tr>
<td>2</td>
<td>675 mm²</td>
<td>25 mm</td>
<td>675 mm x 25 mm = 16 875 mm³</td>
</tr>
<tr>
<td>∑</td>
<td>4 275 mm²</td>
<td></td>
<td>124 875 mm³</td>
</tr>
</tbody>
</table>

\[
X = \frac{\sum \text{Ax}}{\sum A} = \frac{124 \, 875 \, \text{mm}^3}{4 \, 275 \, \text{mm}^2} = 29,21 \, \text{mm}
\]

IF A CANDIDATE SWOP AREA 1 AND 2 AROUND DEDUCT 1 MARK

(10)
5.2.1

<table>
<thead>
<tr>
<th>MEMBER</th>
<th>NATURE</th>
<th>MAGNITUDE</th>
</tr>
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<tbody>
<tr>
<td>AE</td>
<td>Strut</td>
<td>92 N</td>
</tr>
<tr>
<td>DG</td>
<td>Tie</td>
<td>35 N</td>
</tr>
</tbody>
</table>

Tolerance of 1 N to either side
NOT TO SCALE DUE TO ELECTRONIC TRANSFER.
USE A MASK TO MARK THIS QUESTION.
IF THE CANDIDATE WROTE THE MEASUREMENTS IN THE WRONG COLUMN ONE MARK MUST BE DEDUCTED FROM THE TOTAL
5.3  5.3.1  20 N/m √  
      5.3.2  8 m √  
      5.3.3  4 m √  

5.3.4

If the lines between B and D are straight lines no marks may be awarded for these lines.

NOT TO SCALE DUE TO ELECTRONIC TRANSFER.
USE A MASK TO MARK THIS QUESTION.
BECAUSE DISTANCES BETWEEN AB, BC, ECT. MAY DIFFER ON THE ANSWER SHEETS OF THE PROVINCES.
# ANSWER SHEET 6.1

<table>
<thead>
<tr>
<th>NO.</th>
<th>QUESTIONS</th>
<th>ANSWERS</th>
<th>MARKS</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Name the title of the drawing</td>
<td>South Elevation √</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Identify number 1.</td>
<td>Ridge/Ridge capping/Ridging √</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Identify number 2.</td>
<td>Tile roof/Tile/Roof tile/Concrete tile/roof covering √</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Identify number 3.</td>
<td>Gutter √</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Identify number 4.</td>
<td>Downpipe √</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Identify number 5.</td>
<td>North point/North direction/True North √</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Identify number 6</td>
<td>NGL/Natural ground level/Ground level √</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Identify number 7</td>
<td>Window Sill √</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Name the type of roof on the eastern side of the house.</td>
<td>Gable √</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Name the type of roof on the western side of the house.</td>
<td>Hipped roof √</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Name the material that can be used for the fascia board?</td>
<td>Wood/Timber/Cement fibre/uPVC/Plastic/Galvanised sheet metal √</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>On how many sides of the building will you find fascia boards?</td>
<td>3 sides √</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Draw the top view (roofline) of the roof for the elevation indicated in FIGURE 6.1 in the column alongside.</td>
<td><img src="image.png" alt="Diagram" /></td>
<td>3</td>
</tr>
</tbody>
</table>

**TOTAL** 15
QUESTION 6: GRAPHICS AND COMMUNICATION
ANSWER SHEET 6.2

SECTION BB
NOT TO SCALE: USE A MASK TO MARK THIS QUESTION

Application of scale
Correctness of drawing: Wall Closed eave Roof truss

• All parts of the drawing must be correctly drawn to receive a mark.
• If the section is drawn the wrong way around deduct one mark

[40]