



# basic education

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

## **NATIONAL SENIOR CERTIFICATE**

**GRADE 12**

**CIVIL TECHNOLOGY**

**NOVEMBER 2014**

**MEMORANDUM**

**MARKS: 200**

**This memorandum consists of 19 pages.**

**QUESTION 1: CONSTRUCTION, SAFETY AND MATERIAL**

## 1.1.1

- Wear earmuffs / ear protection/ ear plugs ✓
- Wear an overall ✓
- Wear safety gloves ✓ (3)
- Safety goggles/ Face shield
- Dust mask
- Safety guard on machine
- Safety boots

## 1.2.1

## Safe handling

- Avoid bringing the ladder into contact with electricity. ✓
- Place the ladder so that its stiles are a quarter of its length from its support.
- A ladder that is not securely tied at the top, must be held by a person at the bottom when in use.
- Where ever possible it should project 900 mm (Three steps) above its support.
- A ladder should be inspected regularly.
- As paint conceals defects use varnish or wood oil to preserve ladders.
- Keep ladders clean.
- Do not use / leave ladders on wet ground or expose to weather conditions.
- Ladders lying on floors may cause someone to trip and fall.
- Do not use ladders horizontally as runways or scaffolding.
- Use ropes to haul up tools and equipment.
- Never leave a ladder in front of a door / where it may be knocked over.
- Ladders should be fitted with non slip feet.
- Store ladders in a cool place.
- Use both hands when climbing up or down a ladder.
- Never wedge one stile up when the floor surface is uneven.
- Beware of wet, greasy or icy rungs.
- Never make the ladder stand on something to give it extra height. (1)
- Not more than one person on the ladder at any time.

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

## 1.2.2

## Maintenance

- Store ladders in a cool/dry place. ✓
- As paint conceals defects use varnish or wood oil to preserve ladders.
- Keep ladders clean.
- Store on hooks / brackets/ horisontaal. (1)
- Inspect ladder regularly.

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

## 1.3

- Temporary guard rails must be secured in the opening to prevent a person from falling off. ✓
- Guard rails must be placed at approximately 900 mm high. ✓
- Where materials might fall on a person's head below, a sufficient catch-net should be placed just below the surface.
- Toe boards should be secured on the floor to prevent overstepping.
- Toe boards should be secured on the floor to prevent materials from falling off.
- Sufficient warning notices should be placed.
- Open platforms and stairs should be kept free from rubbish.
- Open platforms and stairs should be kept free from unnecessary obstruction or material. (2)
- Wear safety harness. (Safety clothing not accepted)

**ANY TWO OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

## 1.4

- A notice should be displayed on the machine stating its safe work load. Do not overload hoist. ✓
- A notice should be displayed on the machine, stating that no person must ride on the hoist. ✓
- An automatic and a manual brake must be fitted to prevent materials from over running.
- A builders hoist should also have all the necessary safety features such as safety guards etc. (2)
- Opening on floor where hoist is not park must be fenced of.

**ANY TWO OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

## 1.5

- Remove any traces of dust, rust, oil or grease, clean it. ✓
- Sand down the metal using emery cloth (sandpaper)
- Apply rust proof under coat / primer. ✓
- Apply paint. ✓ (3)

**ANY THREE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

1.6.1 Double casement window/ Sash rail (1)

1.6.2 A - Frame head ✓  
 B - Top rail /sash rail/top rail of window ✓  
 C – Casement (window) stile / Stile ✓  
 D - Glazing bar / vertical glazing bar/ putty / wooden strip ✓  
 E – Frame stile/ jamb ✓ (5)

1.7

- To obtain a fairly level smooth surface. ✓
- To remove marks made by the straight edge. ✓
- To help to compact the concrete surface. ✓
- To embed stones just beneath the surface. ✓
- Easy to clean. (4)
- Easier to lay tiles.
- To enhance the appearance.
- To seal the surface.

**ANY FOUR OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

1.8.1 H-beam/ profile ✓ (1)

- 1.8.2
- Easy to weld ✓
  - Can easily be joined
  - Malleable
  - Ductile
  - Prone to rust
  - Grey in colour
  - Strong (1)
  - Resistant to torsion/ bending
  - Strong under compression

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 1.8.3
- Beam above the opening of stage ✓
  - Columns supporting a beam (1)
  - Under the stage
  - Steel roof trusses/pillars/columns

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

1.9

- It prevents wind from penetrating area between the ceiling and the roof. ✓
- It provides good insulation.
- It keep warmth or coolness inside the building.
- It prevents perching and breeding spots for birds.
- It prevents insects and rodents from entering the roof area.
- It prevents dust from entering the area between the ceiling and the roof. (1)

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 1.10
- Time consuming to build beam filling between purlins. ✓
  - Hot air is trapped in the roof space. (1)

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

1.11.1 Low strength –foundations with no reinforcement, free standing walls, footings

- and mass concrete/ filling/ site concrete/ walkways. ✓ (1)
- 1.11.2 Medium strength – Suspended structural beams, slabs, precast items, heavy duty floor/ walkways reinforced foundations and slabs/light duty house floors. Patios/ steps/ driveways. ✓ (1)
- 1.11.3 High strength – Foundations with reinforcement and slabs, heavy duty floors(suspended floors), paths, patios, steps, driveways and garage floors suspended structural beams/ precast items/bridges/dams/roads. ✓ (1)

**[30]**

**QUESTION 2 ADVANCE CONSTRUCTION AND EQUIPMENT**

## 2.1

- It should be strong enough to bear the mass of wet concrete. ✓
- It should be able to bear the mass of people and equipment working on it. ✓
- It should be nailed together accurately according to the intended size and shape.
- It should be sealed off to prevent unnecessary loss of concrete which may lead to honeycombing.
- Designed to be easily placed in position by hand or lifting equipment.
- It should be made of material that is easily nailed together or assembled.
- It should be designed to be easily erected and dismantled without replacing any parts. (2)
- Repairable on site.

**ANY TWO OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

2.2.1 Spirit level – to level and plumb the door frame (horizontal and vertical accuracy) doorframe/door /wall.✓ (1)

2.2.2 Steel Square – To check squareness of the corners of the frame/90°. ✓ (1)

## 2.3

- Lubricate and adjust according to instructions. ✓
- Clean after use. ✓
- Store in a safe place.
- Repair or replace damaged electric cord.
- Keep ventilation holes open and clean.
- Service the plane regularly/inspect the plane regularly
- Avoid planing wood that contains nails.
- Handle it so as not to damage it.
- Use machine only for the intended purpose. (2)
- Do not force the electric plane.
- Blades must be sharp and secured properly

**ANY TWO OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

## 2.4

| Criteria  | Rough Arch  | Gauged Arch  |
|-----------|---|--|
| Materials | Standard bricks can be used. ✓<br>Stock bricks can be used.<br>Cheaper bricks.<br><br>(Any one) | Moulded bricks. ✓<br>Wedge shaped bricks(voussoirs)<br>Face Bricks can be cut into shape.<br>More expensive bricks.<br>(Any one) |
| Labour    | Semi-skilled labour. ✓<br>Less time consuming.<br>Must be plastered.<br>(Any one)               | Skilled labour. ✓<br>More time consuming.<br>Must not be plastered<br>(Any one)  |

**ANY OTHER ACCEPTABLE ANSWER**

(4)

- 2.5
- Tensile force ✓
  - Compressive force ✓
  - Shear force / lateral forces
- (2)

**ANY TWO OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 2.6.1
- A – Steel capping/casing ✓
  - B – Undisturbed earth / unstable soil / soft soil ✓
  - C – Steel tip/steel drive point ✓
- (3)

- 2.6.2 A drop hammer ✓ (1)

- 2.6.3
- When the soil is not stable / soft /low density ✓
  - Water content of soil is high.
- (1)

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 2.7.1 Main bars: To act against / counteract the tensile forces. ✓ (1)

- 2.7.2 Anchor bars: To act against the compression forces. ✓ (1)

- 2.7.3 Shear bars: To act against the shearing forces. ✓ (1)

- 2.7.4 Stirrups: To hold, bind or join the main bars together / Resist shear stress. ✓ (1)

2.8

- The wall needs to be cleaned. (chipping of the wall not acceptable)✓
  - Determine where to start tiling. ✓
  - Snap an additional line the width of a tile from each wall using a chalk. line./batten ✓
  - Mix the tile cement ✓
  - Water proofing the wall
  - Apply the tile cement
  - Place or press tiles into position, position spacers
  - Cut tiles where necessary
  - Insert edging on corners
  - Grout / remove excess grout
- (4)

**ANY FOUR OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 2.9.1 Ridge capping/ridge/ ridge plate/ galvanised ridge ✓ (1)

- 2.9.2 To cover/seal the opening between the two galvanised roof sheets at the ridge. ✓ (1)  
To prevent dust, rain and vermon to enter the roof.

- 2.9.3 Purlin ✓ 50 mm x 76 mm ✓ (2)

- 2.9.4 38 mm x 38 mm ✓ (1)

- 2.9.5 IBR or Corrugated galvanised roof sheeting /cement fibre sheets/Perspex sheet/ fibre glass/ metal sheeting.✓ (1)

2.9.6 King post (1)

2.10 Formwork can be described as a mould or a box/temporally support, ✓ which is prepared in situ into which fresh concrete can be poured to form the shape of the required structure/staircase// similar structures/ columns. ✓ (2)

**OR ANY OTHER EXPLANATION MEANING THE SAME AS ABOVE**

- 2.11
- Can be used repeatedly ✓
  - No colour differences between different castings of concrete ✓
  - Lasting longer /stronger
  - Not easily damaged (2)
  - Quicker to install and dismantle

**ANY TWO OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

2.12.1 Distance = (Top stage line reading – Bottom stage line reading) × 100  
= (1,535 – 1,485) ✓ × 100  
= 0,05 ✓ × 100 ✓  
= 5 ✓ m (4)  
OR

$$\begin{aligned} &= (1,535 \checkmark - 1,485) \times 100 \checkmark \\ &= 5 \text{ m } \checkmark \checkmark \end{aligned}$$

Only the answer 2 marks

**[40]**



**QUESTION 3: CIVIL SERVICES**

## 3.1.1

- It is reliable under normal conditions. ✓
- It is relatively cheap. (Only capital expense is in sinking the borehole) ✓
- Water is good enough for human consumption if water is not contaminated.
- It is independent from municipal supply.
- You will have your own water supply.
- There is no restriction on the use of water from boreholes.
- It saves money.
- It can add value to your property.
- Easy to use.
- Possible better taste/cleaner water.

(2)

**ANY TWO OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

## 3.1.2

- The pump can be stolen ✓
- The pump can break ✓
- The pipes can get clogged and takes time to be cleaned.
- Water can become contaminated.
- Electric cables can be stolen/power outages.
- Draught/ water table.
- Reliable water.

(2)

**ANY TWO OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 3.2 It reduces the incoming water supply with too high pressure to an acceptable pressure value. ✓  
It forwards a constant pressure into the installation. ✓  
It regulates the water pressure entering the geyser /makes it possible to open two hot water taps at the same time without the pressure dropping.

(2)

**ANY OTHER ACCEPTABLE ANSWER**

- 3.3.1 Any setting between 30°C and 70°C (centigrade) is acceptable ✓ (1)

- 3.3.2 Element ✓ (1)

- 3.4.1
- The system should be installed in a manner so that enough space is left for maintenance and repair work. ✓
  - All pipe joints must be leak free. ✓
  - Gas pipes leading to the system should be flexible to ease installation. ✓
  - The system must have a cut off valve and a drain valve to cut off gas in case of an emergency.
  - Gas cylinder should be placed outside on a concrete slab.
  - A safety sign “No open flames” should be visible at the gas cylinder.
  - If the gas cylinder have to be on the inside of the room, it should be well ventilated.
  - Gas pipes should never be chased into a brick wall.
  - Gas pipes should pass through a steel tube through the exterior wall.
  - Should be installed out of reach of children.

- Must be installed according to national and municipal regulations. (3)
- Must be installed by a qualified person.
- Not installed near flammable materials.
- Must be installed in rooms larger than 20 square meters.

**ANY THREE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 3.4.2
- Does not use electricity ✓ (2)
  - Water is rapidly heated ✓
  - Hot water available all the time as long as there is gas, even during electricity outages / failure.
  - Running/Maintenance cost is cheaper.

**ANY TWO OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 3.5.1 Prepaid electrical meter/ electrical meter ✓ (1)
- 3.5.2 To punch in the prepaid voucher number. ✓  
To punch in the number on your slip. (1)  
To punch in the number/ code.

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 3.5.3 An electrician /municipality ✓ (1)
- 3.5.4 Install in the kitchen or in the passage or can also be installed outside the house in the meter box. ✓ (2)  
To monitor and manage electricity consumption. ✓  
Open-ended
- 3.5.5 Against the wall, ✓ so that it can be monitored easily ✓ or (2)  
In a cupboard, so that it is not visible for esthetic purposes.  
Open-ended

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 3.6 Conduits are used as sleeves for electrical wiring ✓ or (1)  
Conduits protect wires against damage by rodents.

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 3.7 Chased conduits are placed in channels that are chased into the wall or floor. ✓  
Chased conduits are plastered into the channels and are not visible.

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- Surface mounted conduits are fitted on to the surface of the walls and secured with saddle clamps. ✓ (2)  
Surface mounted conduits are visible.

**ANY TWO OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

3.8.1 INVERT LEVEL AT A: = Ground cover + Pipe diameter  
= 340 mm ✓ + 110 mm ✓  
= 450 mm ✓ (3)

INVERT LEVEL AT B: = Invert level at A +(distance x slope)  
= 450 mm ✓ + (40 000 x 1 ÷ 40) ✓  
= 450 mm + 1 000 mm  
= 1 450 mm ✓ (3)

3.8.2 Rodding eye/ manhole ✓ (1)  
**[30]**

**QUESTION 4 QUANTITIES AND CALCULATIONS AND JOINING**

- 4.1 Truss hanger ✓  
Roof wire / hoop iron ✓  
Galvanised strips / straps  
Galvanised steel ribbon (2)  
Bolt and clamp  
Rawl bolts

**ANY TWO OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWERS**

- 4.2 Rawl bolt ✓ (1)  
To fasten gates / brackets onto brickwork, concrete ✓ (1)

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWERS**

- 4.3.1 Soldered together/capillary ✓  
Compression joint (1)

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 4.3.2 Threaded joints /fittings ✓ (1)

- 4.4.1 Used to attach materials on to concrete or brick wall. ✓ (1)

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 4.4.2 Used in cabinet making ✓  
Fixing quarter rounds and mouldings ✓  
Built-in cupboards/ knotty pine ceilings (1)  
Window beads/ beadings/picture frames

**ANY ONE OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

- 4.5 Screws takes longer to drive in ✓ but has a greater holding power ✓  
Nail are quicker to install it has not got the same holding power (2)

**OR ANY OTHER ACCEPTABLE ANSWER**

- 4.6
- Component / description/ item/ part ✓
  - Number / quantity ✓
  - Unit
  - Length/dimensions
  - Breadth
  - Thickness
  - Sub-total
  - Total
  - Material (2)

**ANY TWO OF THE ABOVE OR ANY OTHER ACCEPTABLE ANSWER**

**ANSWER SHEET 4.7 / ANTWOORDBLAD 4.7**

4.7

| A  | B                       | C                                | D   |
|--|-------------------------|----------------------------------|---|
|  |                         |                                  | Centre line: Superstructure                               |
|  |                         |                                  | 2/ 6 000 mm = 12 000 mm                                   |
|  |                         |                                  | 2/ 3 500 mm = <u>7 000 mm</u>                             |
|  |                         |                                  | TOTAL: = 19 000 mm  |
|  |                         |                                  | Minus 4/ 220 = <u>880 mm</u>                              |
|  |                         |                                  | = 18 120 mm $\checkmark\checkmark$                        |
|  |                         |                                  | Centre line = 18,12 m                                     |
| 1/   | 18,12 $\checkmark$      |                                  | Area of wall for superstructure                           |
|  | <u>2,6</u> $\checkmark$ | 47,11 $\checkmark$               |   |
| 1/   | 2 $\checkmark$          |                                  | Area of side door   |
|  | <u>0,8</u> $\checkmark$ | 1,6 m <sup>2</sup> $\checkmark$  |   |
| 1/   | 2,4 $\checkmark$        |                                  | Area of garage door                                       |
|  | <u>2,1</u> $\checkmark$ | 5,04 m <sup>2</sup> $\checkmark$ |   |
| 1/   | 1,5 $\checkmark$        |                                  | Area of window  |
|  | <u>0,9</u> $\checkmark$ | 1,35 m <sup>2</sup> $\checkmark$ |   |
|  |                         |                                  | Total area of wall after deductions                       |
|  |                         |                                  | = 47,11 m <sup>2</sup> - 1,6 m <sup>2</sup> - 5,04 - 1,35 |
|  |                         |                                  | = 39,12 m <sup>2</sup> $\checkmark$                       |
| 2/   | 39,12 $\checkmark$      |                                  |   |
|  | <u>50</u> $\checkmark$  | 3 912 $\checkmark$               | 3 912 bricks will be needed for the superstructure        |
|  | <b>OR</b>               |                                  |   |
| 1/   | 39,12                   |                                  |   |
|  | <u>100</u>              | 3 912                            | 3 912 bricks will be needed for the superstructure        |
|  |                         |                                  | (18)  |
| <b>When answers are done in wrong columns it must be marked and learner penalised with 2 marks</b> |                         |                                  |   |

**[30]**

**QUESTION 5: APPLIED MECHANICS****5.1 ANSWER SHEET 5.1**

$$\begin{aligned} \text{Total Area} &= 900 \text{ mm}^2 + 3\,300 \text{ mm}^2 - 450 \text{ mm}^2 \\ &= 3\,750 \text{ mm}^2 \end{aligned}$$

$$\begin{aligned} \text{Position of centroid from A - A} &= \frac{(A_1 \times d) + (A_2 \times d) - (A_3 \times d)}{\text{Total area}} \\ &= \frac{(900 \times 20) + (3\,300 \times 30) - (450 \times 50)}{3\,750} \\ &= \frac{18\,000 + 99\,000 - 22\,500}{3\,750} \\ &= \frac{94\,500 \text{ mm}^3}{3\,750 \text{ mm}^2} \\ &= 25,2 \text{ mm} \end{aligned}$$

**OR**

Take moments around A on Y –axis

$$\begin{aligned} 3\,750 \text{ mm}^2 \times Y &= (900 \times 20) + (3\,300 \times 30) - (450 \times 50) \\ 3\,750 \text{ mm}^2 \times Y &= 117\,000 - 22\,500 \\ 3\,750 \text{ mm} & \\ &= \frac{94\,500 \text{ mm}^3}{3\,750 \text{ mm}^2} \\ &= 25,2 \text{ mm} \end{aligned}$$

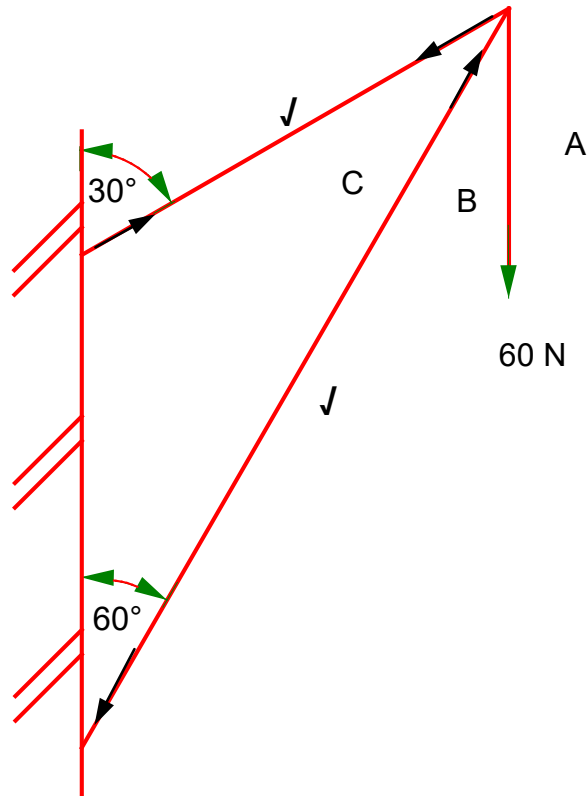
**OR**

| Part                  | AREA (A)              | X  | AREA OF X (Ax)           |
|-----------------------|-----------------------|--|--------------------------|
| Right-angled triangle | 900 mm <sup>2</sup>   | $\frac{h}{3} = \frac{60}{3} = 20 \text{ mm}$   | 18 000 mm <sup>3</sup>   |
| Rectangle             | 3 300 mm <sup>2</sup> | $\frac{b}{2} = \frac{60}{2} = 30 \text{ mm}$   | 99 000 mm <sup>3</sup>   |
| Isosceles triangle    | 450 mm <sup>2</sup>   | $\frac{h}{3} = \frac{30}{3} = 10 \text{ mm}$<br>C = 60 - 10 = 50 mm<br>OR<br>C = 30 + 20 = 50 mm | - 22 500 mm <sup>3</sup> |
| Σ                     | 3 750 mm <sup>2</sup> |  | 94 500 mm <sup>3</sup>   |

$$\begin{aligned} &\frac{\Sigma AX}{\Sigma A} \\ &= \frac{94\,500 \text{ mm}^3}{3\,750 \text{ mm}^2} \\ &= 25,2 \text{ mm} \end{aligned}$$

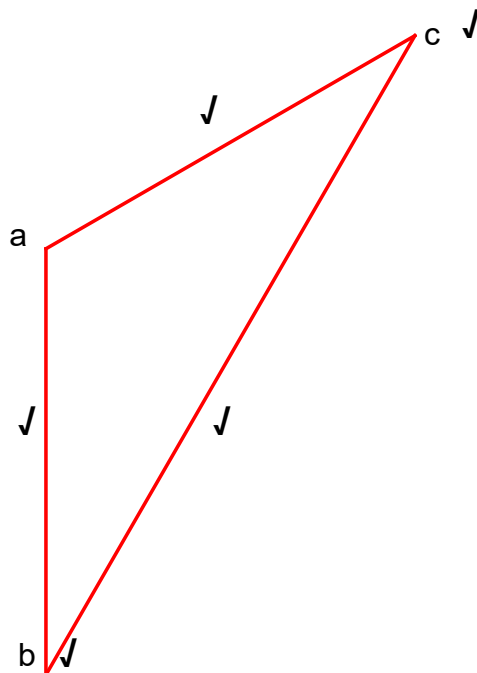
(7)

5.2



(2)

SPACE DIAGRAM  
Nature of forces BC and AC = 2 marks



(5)

VECTOR DIAGRAM  
NOT ACCORDING TO SCALE

**USE A MASK TO MARK THIS QUESTION**

| MEMBER | NATURE  | MAGNITUDE |
|--------|---------|-----------|
| BC     | Strut ✓ | 104 N ✓   |
| CA     | Tie ✓   | 60 N ✓    |

Tolerance of 1 N to either side

(4)

## 5.3

$$5.3.1 \quad 20 \text{ N } \checkmark \quad (1)$$

$$5.3.2 \quad 5 \checkmark \text{ m} \quad (1)$$

$$5.3.3 \quad \text{SFd (4 meters from A)} = \text{left reaction force} - \text{uniformly distributed load} - \text{point load b}$$

$$= 17,5 \text{ N } \checkmark - 20 \text{ N } \checkmark - 10 \text{ N } \checkmark$$

$$\text{OR} \quad (3)$$

$$= 17,5 \checkmark - 30 \checkmark \checkmark$$

$$= -12,5 \text{ N}$$

$$\text{SFe (8 meters from A)} = \text{left reaction force} - \text{uniformly distributed load} - \text{point load b} - \text{point load c} - \text{point load d} + \text{RR} \quad (3)$$

$$= 17,5 \text{ N} - 20 \text{ N} - 10 \text{ N} - 5 \text{ N} + 17,5 \text{ N} \checkmark \checkmark \checkmark$$

$$= 0 \text{ N}$$

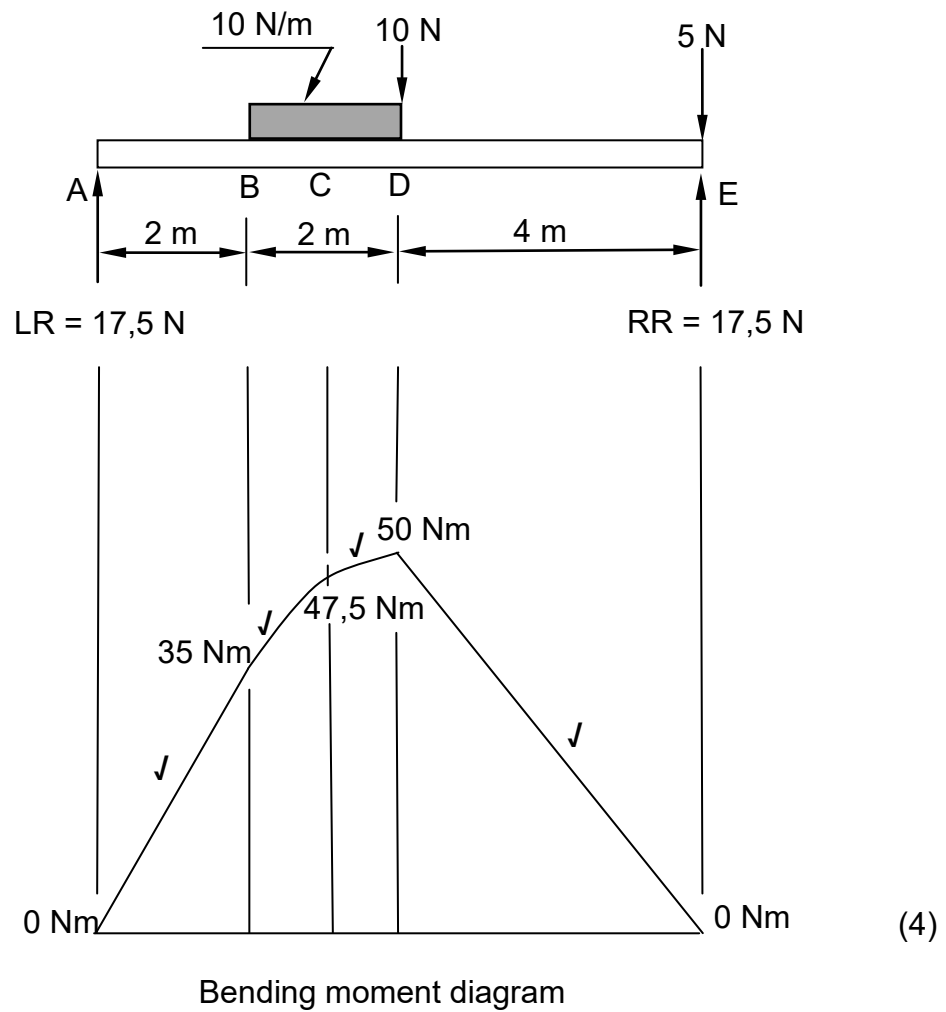
$$\text{OR}$$

$$= -12,5 \text{ N} - 5 \text{ N} + 17,5 \text{ N}$$

$$= 0 \text{ N}$$



5.3.4




Marks are given for lines in 5.3.4 incorrect scale -1.

[30]

|                       |  |  |  |  |  |  |  |  |  |  |
|-----------------------|--|--|--|--|--|--|--|--|--|--|
| <b>CENTRE NUMBER:</b> |  |  |  |  |  |  |  |  |  |  |
|-----------------------|--|--|--|--|--|--|--|--|--|--|

|                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <b>EXAMINATION NUMBER</b> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

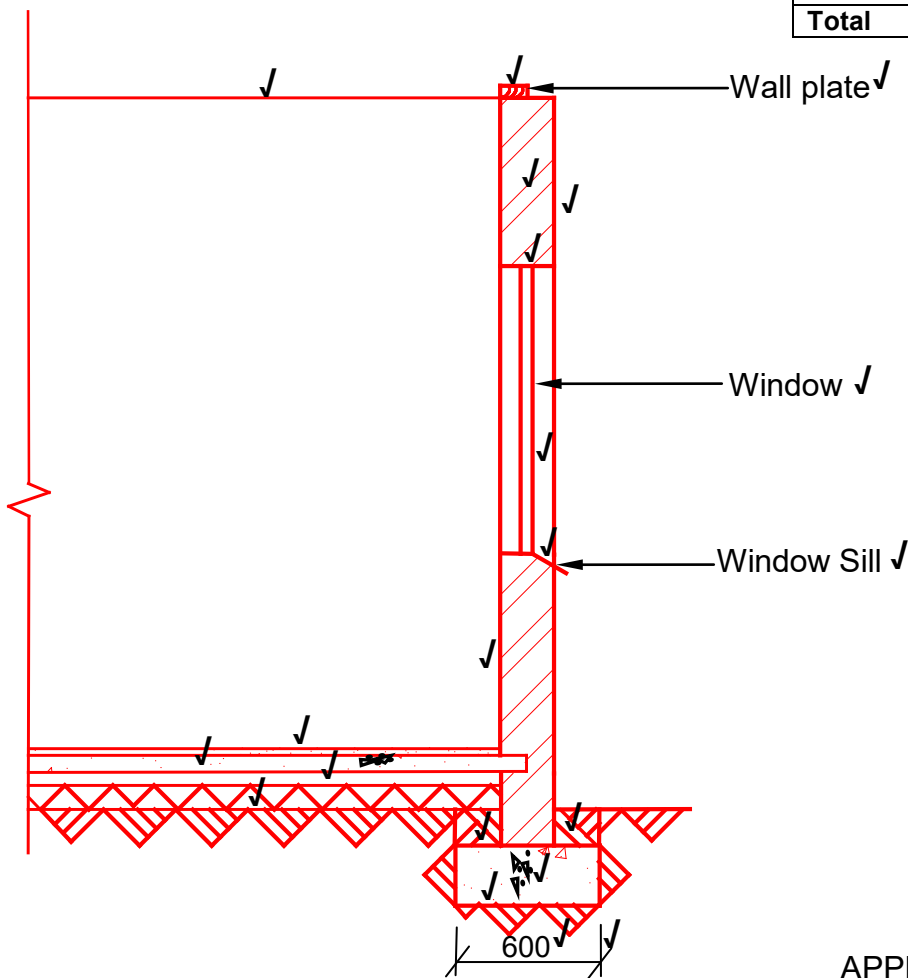
**ANSWER SHEET 6.1**

| <b>NO.</b> | <b>QUESTIONS</b>  | <b>ANSWERS</b>  | <b>MARKS</b> |
|------------|---|---|--------------|
| 1          | Identify number 1.  | Shower  | 1            |
| 2          | Calculate the perimeter of the building.                      | 30 200 mm / 30,2 m  | 1            |
| 3          | Draw the symbol for the gully.                                |  | 1            |
| 4          | What is the thickness of the inner walls?                     | 110 mm  | 1            |
| 5          | Calculate the total area of the house in m <sup>2</sup> .     | 56,0 m <sup>2</sup>   | 2            |
| 6          | Describe the purpose of number 2.                             | To wash hands, face and your body   | 1            |
| 7          | Give the abbreviation for number 3.                           | WC  | 1            |
| 8          | Identify number 4.  | Single sink/ sink   | 1            |
| 9          | Identify number 5.  | Sliding door  | 1            |
| 10         | Name the type of roof of the house.                           | Gable roof  | 1            |
| 11         | Identify the electrical symbol at 6.                          | Distribution board  | 1            |
| 12         | Identify number 7.  | Socket outlet / Wall plug<br>Power point  | 1            |
| 13         | On which elevations will the gutters be placed in this house? | North and South<br>(Show both for one mark )                                      | 1            |
| 14         | Identify number 8.  | Single-pole one-way light switch  | 1            |
|            |   | <b>Total</b>  | <b>15</b>    |

**QUESTION 6: GRAPHICS AND COMMUNICATION**

**ANSWER SHEET 6.2  
QUESTION 6.2**

| Aspect  | Marks     | Learners mark |
|---|-----------|---------------|
| Correctness of substructure   | 6         |               |
| Correctness of super-structure  | 7         |               |
| Correctness of any three drawing symbols  | 3         |               |
| Printing of any three labels  | 3         |               |
| Dimension and dimension lines   | 2         |               |
| Print the scale   | 1         |               |
| Application of scale<br>One or two incorrect = 3<br>Three or four incorrect = 2<br>More than five incorrect = 1<br>No measurement correct = 0 | 3         |               |
| <b>Total</b>  | <b>25</b> |               |



SCALE 1:20 ✓

APPLICATION OF SCALE ✓✓✓

**NOT TO SCALE: USE A MASK TO MARK THIS QUESTION  
FLOOR ON WRONG SIDE: -1 MARK**

[40]

**TOTAL : 200**