



# basic education

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

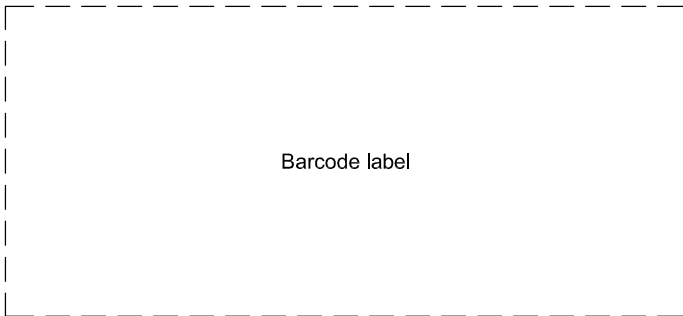
## SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

**ENGINEERING GRAPHICS AND DESIGN P1**  
**2023**

**MARKS: 100**

**TIME: 3 hours**

This question paper consists of 6 pages.



### INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions.
2. Answer ALL the questions.
3. ALL drawings are in first-angle orthographic projection, unless otherwise stated.
4. ALL drawings must be prepared using pencil and instruments, unless otherwise stated.
5. ALL answers must be drawn accurately and neatly.
6. ALL the questions must be answered on the QUESTION PAPER, as instructed.
7. ALL the pages, irrespective of whether the question was attempted or not, must be re-stapled in numerical sequence in the TOP LEFT-HAND CORNER ONLY.
8. Time management is essential in order to complete all the questions.
9. Print your examination number in the block provided on every page.
10. Any details or dimensions not given must be assumed in good proportion.

| FOR OFFICIAL USE ONLY |                |   |   |               |      |           |   |   |               |      |            |   |   |               |      |
|-----------------------|----------------|---|---|---------------|------|-----------|---|---|---------------|------|------------|---|---|---------------|------|
| QUESTION              | MARKS OBTAINED |   |   | $\frac{1}{2}$ | SIGN | MODERATED |   |   | $\frac{1}{2}$ | SIGN | RE-MARKING |   |   | $\frac{1}{2}$ | SIGN |
| 1                     |                |   |   |               |      |           |   |   |               |      |            |   |   |               |      |
| 2                     |                |   |   |               |      |           |   |   |               |      |            |   |   |               |      |
| 3                     |                |   |   |               |      |           |   |   |               |      |            |   |   |               |      |
| 4                     |                |   |   |               |      |           |   |   |               |      |            |   |   |               |      |
| TOTAL                 |                |   |   |               |      |           |   |   |               |      |            |   |   |               |      |
|                       | 2              | 0 | 0 |               |      | 2         | 0 | 0 |               |      | 2          | 0 | 0 |               |      |

| FINAL CONVERTED MARK | CHECKED BY |
|----------------------|------------|
| 100                  |            |

| COMPLETE THE FOLLOWING: |
|-------------------------|
| CENTRE NUMBER           |
| CENTRE NUMBER           |
| EXAMINATION NUMBER      |
| EXAMINATION NUMBER      |

STAPLE

LAND SURVEYOR'S CERTIFICATE OF THE CORNER HEIGHTS AND BOUNDARY LENGTHS OF STAND 1314

| CORNER HEIGHTS AND CONTOUR LINES IN METRES |      | BOUNDARY LENGTHS IN MILLIMETRES |       |
|--------------------------------------------|------|---------------------------------|-------|
| A                                          | 82,3 | AB                              | 59700 |
| B                                          | 77   | BC                              | 33000 |
| C                                          | 77   | CD                              | 22000 |
| D                                          | 78,5 | DG                              | 50500 |
| E                                          | 77,2 | DE                              | 33400 |
| F                                          | 80,4 | EF                              | 36600 |
| G                                          | 80,5 | FG                              | 30400 |
|                                            |      | GA                              | 53000 |

SYMBOL LEGEND:

1. INDIGENOUS TREES

2. PALM TREES

3. 2500 LITRE WATER TANK ON BASE

4. 25 kVA POWER GENERATOR

5. 1,9 m PALISADE FENCE

6. PARKING FOR DISABLED PEOPLE

NOTE:

Contractors must verify all dimensions and levels on site before commencing work. Architects to be notified immediately of any discrepancies.

ARCHITECT'S SIGNATURE: .....

CLIENT'S SIGNATURE: .....

ANSWER 20

In the space provided below, draw, in neat freehand, the SANS 10143 graphical symbol for:

20.1 A GREASE TRAP

20.2 An ELECTRICAL EARTH

20.1 GREASE TRAP

20.2 ELECTRICAL EARTH

| REVISION | DATE       | DESCRIPTION                     |
|----------|------------|---------------------------------|
| 1        | 2022/05/16 | 50 mm ASPHALT FOR DROP-OFF ZONE |

MDR ARCHITECTS  
14 LILLY RD  
STONE HILL  
EAST LONDON  
3411  
www.mdr-arch.co.za  
018 385 7123

PRINTED BY: EXPRESS PRINTERS

DATE OF PRINT: 03/07/2022

DRAWING TITLE: SITE PLAN

PROJECT: PROPOSED NEW COMPUTER CENTRE ON STAND 1314, 7 IMPALA RD, BEACONHURST, EAST LONDON

PROJECT NUMBER: 84-0213

DRAWING NUMBER: 1402-01

DATE: 17/03/2022

DRAWN: DIANNE

CHECKED: CAMERON

REFERENCE CODE: MDR-1143/J

SCALE: 1 : 900

QUESTION 1: ANALYTICAL (CIVIL)

Given:

The site plan of an existing school with a proposed new computer centre, a title panel and a table of questions. The drawing has not been presented to the indicated scale.

Instructions:

Complete the table below by neatly answering the questions, which refer to the accompanying drawing, title panel and civil content.

| QUESTIONS |                                                                                                                                                             | ANSWERS |  |  |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--|--|
| 1         | What is the project number?                                                                                                                                 | 1       |  |  |
| 2         | Name the company that printed the site plan.                                                                                                                | 1       |  |  |
| 3         | What type of fencing surrounds STAND 1314?                                                                                                                  | 1       |  |  |
| 4         | In which suburb is the architectural firm situated?                                                                                                         | 1       |  |  |
| 5         | What scale is indicated for the drawing?                                                                                                                    | 1       |  |  |
| 6         | What is the proposed new extention on STAND 1314?                                                                                                           | 1       |  |  |
| 7         | How many parking bays are reserved for people with disabilities?                                                                                            | 1       |  |  |
| 8         | What is the surface finish for the drop-off zone?                                                                                                           | 1       |  |  |
| 9         | What does the abbreviation <i>IE</i> at 1 stand for?                                                                                                        | 1       |  |  |
| 10        | Name the feature at 2.                                                                                                                                      | 1       |  |  |
| 11        | Name the feature at 3.                                                                                                                                      | 1       |  |  |
| 12        | Which elevation of the proposed new computer centre faces the parking area?                                                                                 | 1       |  |  |
| 13        | What is the total amount of water that can be stored in all the water tanks shown on STAND 1314?                                                            | 2       |  |  |
| 14        | What is significant about the contour line at 75 m?                                                                                                         | 2       |  |  |
| 15        | What does the abbreviation <i>WC</i> for a toilet stand for?                                                                                                | 1       |  |  |
| 16        | In what colour must new glass be indicated on sectional elevations?                                                                                         | 1       |  |  |
| 17        | What is the distance between the new computer centre and Impala Road in metres?                                                                             | 2       |  |  |
| 18        | In the space below (ANSWER 18), determine the total length of the fencing around the <b>drop-off zone</b> in metres.                                        | 3       |  |  |
| 19        | In the space below (ANSWER 19), determine the total area of the brick paving in square metres.                                                              | 3       |  |  |
| 20        | In the space in the title panel (ANSWER 20), draw, in neat freehand, the SANS 10143 graphical symbol for: 20.1 a GREASE TRAP, and 20.2 an ELECTRICAL EARTH. | 4       |  |  |
| TOTAL     |                                                                                                                                                             | 30      |  |  |

ANSWER 18

Show ALL calculations.

ANSWER 19

Show ALL calculations.

BRICK PAVING

21000

11000

18000

25000

7000

29000

32000

EXAMINATION NUMBER

EXAMINATION NUMBER

2

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| 2         | Name the company that printed the site plan.                                                                                                                | 1       |  |  |
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| 4         | In which suburb is the architectural firm situated?                                                                                                         | 1       |  |  |
| 5         | What scale is indicated for the drawing?                                                                                                                    | 1       |  |  |
| 6         | What is the proposed new extention on STAND 1314?                                                                                                           | 1       |  |  |
| 7         | How many parking bays are reserved for people with disabilities?                                                                                            | 1       |  |  |
| 8         | What is the surface finish for the drop-off zone?                                                                                                           | 1       |  |  |
| 9         | What does the abbreviation <i>IE</i> at 1 stand for?                                                                                                        | 1       |  |  |
| 10        | Name the feature at 2.                                                                                                                                      | 1       |  |  |
| 11        | Name the feature at 3.                                                                                                                                      | 1       |  |  |
| 12        | Which elevation of the proposed new computer centre faces the parking area?                                                                                 | 1       |  |  |
| 13        | What is the total amount of water that can be stored in all the water tanks shown on STAND 1314?                                                            | 2       |  |  |
| 14        | What is significant about the contour line at 75 m?                                                                                                         | 2       |  |  |
| 15        | What does the abbreviation <i>WC</i> for a toilet stand for?                                                                                                | 1       |  |  |
| 16        | In what colour must new glass be indicated on sectional elevations?                                                                                         | 1       |  |  |
| 17        | What is the distance between the new computer centre and Impala Road in metres?                                                                             | 2       |  |  |
| 18        | In the space below (ANSWER 18), determine the total length of the fencing around the <b>drop-off zone</b> in metres.                                        | 3       |  |  |
| 19        | In the space below (ANSWER 19), determine the total area of the brick paving in square metres.                                                              | 3       |  |  |
| 20        | In the space in the title panel (ANSWER 20), draw, in neat freehand, the SANS 10143 graphical symbol for: 20.1 a GREASE TRAP, and 20.2 an ELECTRICAL EARTH. | 4       |  |  |
| TOTAL     |                                                                                                                                                             | 30      |  |  |

ANSWER 18

Show ALL calculations.

ANSWER 19

Show ALL calculations.

BRICK PAVING

21000

11000

18000

25000

7000

29000

32000

EXAMINATION NUMBER

EXAMINATION NUMBER

2

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Please turn over



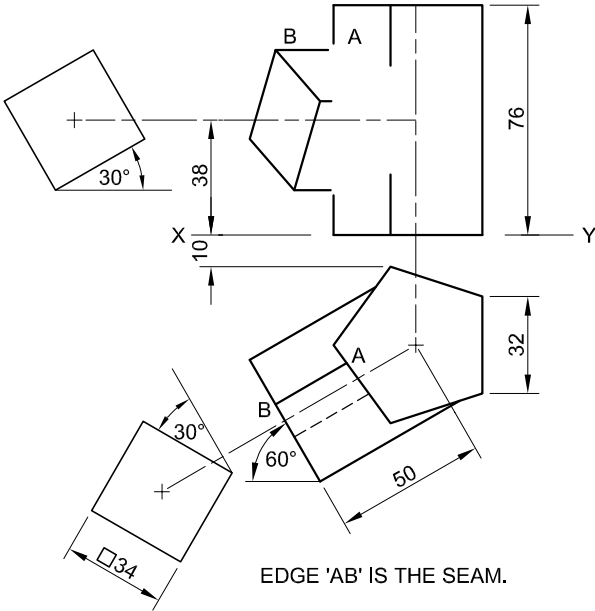
QUESTION 2: INTERPENETRATION AND DEVELOPMENT

- Given:**
- The top view and incomplete front view of a right square prism that has been shaped to fit around a right regular pentagonal prism. The axes of both solids lie in a common vertical plane.
  - Auxiliary views of the square prism

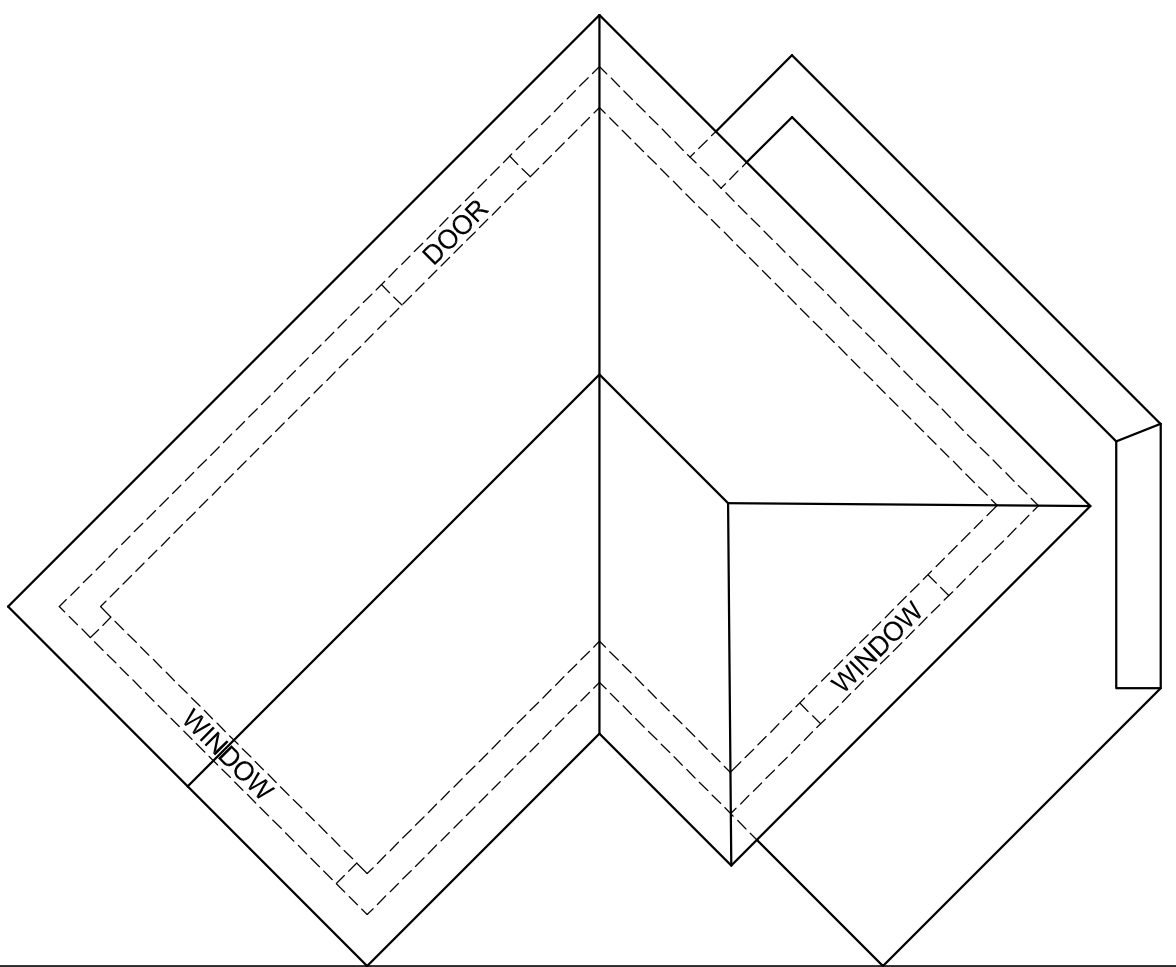
- Instructions:**
- Draw, to scale 1 : 1, the following views of the TWO solids:
- 2.1 The given top view
  - 2.2 The complete front view, clearly showing the curve of interpenetration
  - 2.3 The complete left view, clearly showing the curve of interpenetration
  - 2.4 The development of the surface of the square prism. Make edge 'AB' the seam.

- Planning is essential.
- Show ALL hidden detail.
- Show folding lines on the development.
- Show ALL construction.

[38]



| ASSESSMENT CRITERIA |             |                                |  |  |   |
|---------------------|-------------|--------------------------------|--|--|---|
| 1                   | TOP VIEW    | 6 <sup>1</sup> / <sub>2</sub>  |  |  |   |
| 2                   | FRONT VIEW  | 11 <sup>1</sup> / <sub>2</sub> |  |  |   |
| 3                   | LEFT VIEW   | 12 <sup>1</sup> / <sub>2</sub> |  |  |   |
| 4                   | DEVELOPMENT | 7 <sup>1</sup> / <sub>2</sub>  |  |  |   |
| PENALTIES (-)       |             |                                |  |  |   |
| TOTAL               |             | 38                             |  |  |   |
| EXAMINATION NUMBER  |             |                                |  |  |   |
|                     |             |                                |  |  |   |
| EXAMINATION NUMBER  |             |                                |  |  | 3 |



QUESTION 3: PERSPECTIVE

**Given:**  
Three views of a house and the information needed to draw a two-point perspective drawing  
PP – Picture plane  
HL – Horizon line  
GL – Ground line  
SP – Station point

- Instructions:**  
Complete the perspective drawing.
- Align the drawing sheet with the ground line (GL).
  - Determine and label the vanishing points.
  - Show ALL construction.
  - Show the depth at the windows.
  - No hidden detail or internal detail is required.
- [40]

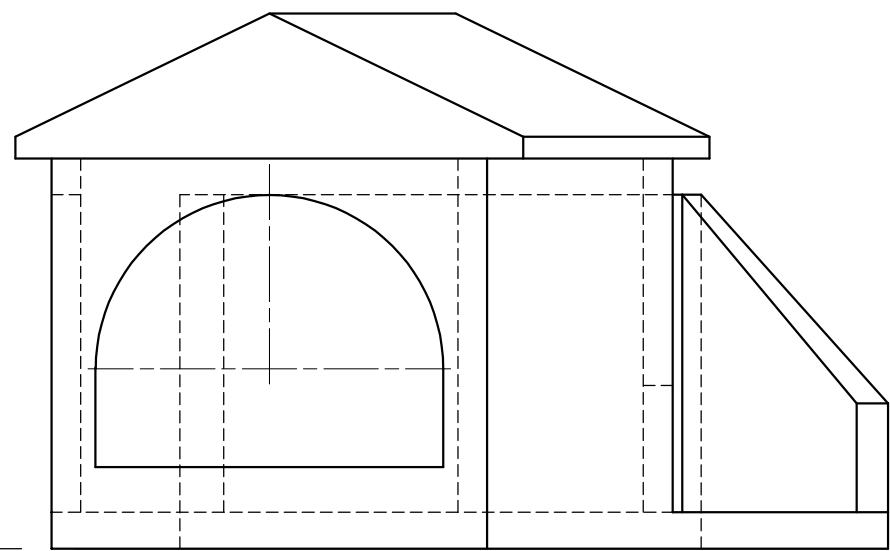
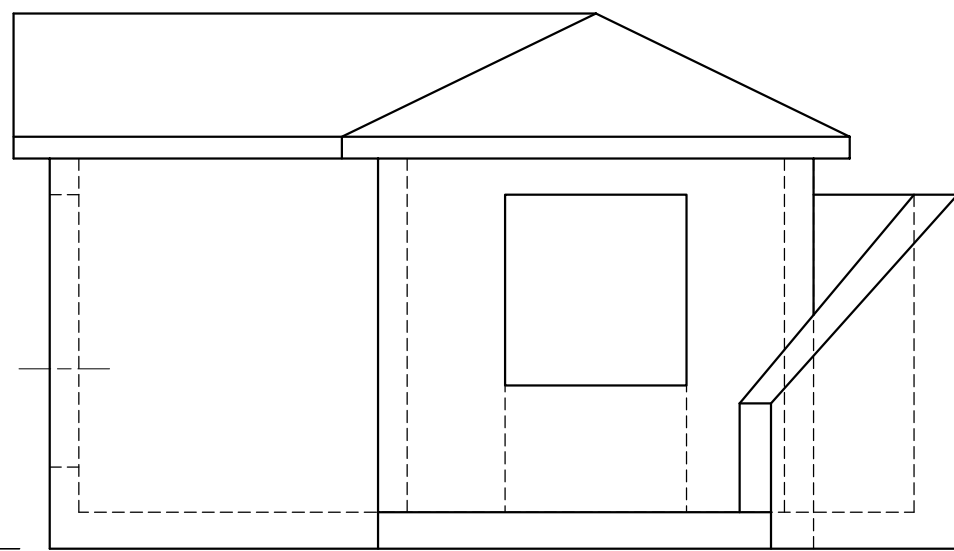
| ASSESSMENT CRITERIA |               |        |  |  |  |
|---------------------|---------------|--------|--|--|--|
| 1                   | CONSTRUCTION  | 6      |  |  |  |
| 2                   | STOEP + WALLS | 12 1/2 |  |  |  |
| 3                   | ARCH + CONSTR | 8 1/2  |  |  |  |
| 4                   | WINDOW        | 3 1/2  |  |  |  |
| 5                   | ROOF          | 9 1/2  |  |  |  |
| PENALTIES (-)       |               |        |  |  |  |
| TOTAL               |               | 40     |  |  |  |

PP \_\_\_\_\_

HL \_\_\_\_\_

GL \_\_\_\_\_

\_\_\_\_\_ HL



SP

|                    |   |
|--------------------|---|
| EXAMINATION NUMBER |   |
| EXAMINATION NUMBER | 4 |

WINDOW OPENING  
ROOF CAP  
RIDGE COVER  
150 x 100 mm GUTTER ON  
200 x 20 mm FASCIA BOARD  
Ø100 mm RWDP THAT STOPS  
50 mm ABOVE THE GULLEY  
FINISHED FLOOR LEVEL  
150 mm HIGH STEP  
GROUND LEVEL  
300 mm HIGH PORCH  
CONCRETE KITCHEN STEPS

INCOMPLETE SOUTH ELEVATION

BEDROOM  
BATHROOM  
KITCHEN  
LIVING AREA  
PORCH

ROOM AND AREA DESIGNATIONS

FLOOR FINISHES  
BEDROOM: CARPET  
BATHROOM: TILES  
LIVING AREA: WOOD  
KITCHEN: TILES  
PORCH: WOOD

| ROOF COMPONENTS |                                          |
|-----------------|------------------------------------------|
|                 | 150 x 100 mm GUTTER                      |
|                 | 200 x 20 mm FASCIA BOARD AND BARGE BOARD |
|                 | ROOF CAP                                 |

1000  
150  
30°  
1250  
150  
250  
750  
550  
GL

KITCHEN STEP DETAIL

| ELECTRICAL SYMBOLS |  |
|--------------------|--|
|                    |  |
|                    |  |
|                    |  |

| DOOR AND WINDOW SCHEDULE                                                                                                                                                                  |                                                     |                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------|
| <p>TO FIT<br/>2050<br/>100<br/>SLIDING DOOR (D1)</p>                                                                                                                                      | <p>TO FIT<br/>2050<br/>DOOR FRAME AND DOOR (D2)</p> | <p>1100<br/>900<br/>550<br/>WINDOW (W1)</p>                                     |
| <p>WINDOW NOTES:</p> <ul style="list-style-type: none"><li>A = OPENING SIDE</li><li>B = FIXED PANEL</li><li>ALL FRAMES = 50 mm</li><li>150 x 20 mm SILL TILES UNDER ALL WINDOWS</li></ul> |                                                     | <p>2000<br/>1500<br/>600<br/>WINDOW (W2)</p> <p>600<br/>600<br/>WINDOW (W3)</p> |

W2  
W2  
W3  
W3  
SH  
WB  
D2  
D2  
D1  
S  
W1

INCOMPLETE FLOOR PLAN

FEATURES  
D1 SLIDING DOOR  
D2 DOOR  
W1 WINDOW  
W2 WINDOW  
W3 WINDOW

FIXTURES  
WC TOILET  
SH SHOWER  
WB WASH BASIN  
S SINK

ELECTRICAL FITTINGS  
1. ONE-WAY SWITCH - SINGLE POLE  
2. THREE-WAY SWITCH - SINGLE POLE  
3. FLUORESCENT LIGHT 2 x 40 W  
4. CEILING LIGHT  
5. WALL-MOUNTED LIGHT  
6. SWITCHED SOCKET OUTLET

NOTE:  
THE ARROW SHOWS THE LIGHT CONNECTION TO THE SWITCH.

900 c/c  
900 c/c  
400 c/c  
400 c/c  
400 c/c  
400 c/c

SCHEMATIC DIAGRAM OF A ROOF TRUSS AT E-E

ROOF NOTES:  
20° ROOF PITCH

114 x 40 mm ROOF TRUSSES ON  
114 x 40 mm WALL PLATES

250 mm ROOF OVERHANG TO END OF  
ROOF TRUSSES

20 mm FIBRE CEMENT ROOF SHEETING ON  
80 x 50 mm PURLINS @ 900 c/c

200 x 20 mm FASCIA BOARDS WITH 150 x 100 mm  
GUTTERS ON ALL SIDES

10 mm CEILING BOARDS ON 40 x 40 mm  
BRANDERING STRIPS @ 400 mm c/c

200 x 80 mm LINTELS ABOVE ALL DOOR AND WINDOW OPENINGS  
200  
2050  
950  
500  
350  
GROUND LINE  
2900

INCOMPLETE FOUNDATION AND EXTERNAL WALL DETAIL

| FIXTURES                                                                                 |                                              |                                                        |                                                            |
|------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------------------------|------------------------------------------------------------|
| <p>800<br/>150<br/>400<br/>FLOOR LEVEL<br/>500<br/>300<br/>100<br/>1200<br/>SINK (S)</p> | <p>1000<br/>100<br/>1000<br/>SHOWER (SH)</p> | <p>800<br/>250<br/>300<br/>500<br/>WASH BASIN (WB)</p> | <p>800<br/>400<br/>400<br/>650<br/>200<br/>TOILET (WC)</p> |

### QUESTION 4: CIVIL DRAWING

**Given:**

- The incomplete south elevation of a **new house**, showing the walls, the sliding door and window openings, steps, porch, the roof and labels
- The incomplete floor plan showing the roof lines, walls, steps, positions of doors, windows and fixtures, as well as electrical layout
- Schematic diagram of a roof truss at E-E and roof notes
- The incomplete foundation and external wall detail
- Room designations and floor finishes
- A table of roof components
- Kitchen step detail
- A table of electrical symbols
- A door and window schedule
- A table of fixtures
- The incomplete floor plan of the **new house**, drawn to scale 1 : 50, and the incomplete foundation and a breakline for the detailed section, drawn to scale 1 : 20, on page 6.

**Instructions:**  
Answer this question on page 6.

4.1 Using the given incomplete floor plan, draw, in first-angle orthographic projection and to scale 1 : 50, the following views of the **new house**:

4.1.1 **THE COMPLETE FLOOR PLAN**  
**Add the following features to the drawing:**

- ALL doors and windows
- ALL fixtures as indicated by the abbreviations
- ALL electrical fittings as indicated by the numbers
- ALL hatching detail

4.1.2 **THE COMPLETE SOUTH ELEVATION**  
**Show the following features on the drawing:**

- The outside walls, steps, porch, sliding door and window detail
- The roof detail, including the fascia boards, gutters and rainwater down-pipe
- The finished floor level

4.2 Using the incomplete foundation and break line on page 6, draw, to scale 1 : 20, a **DETAILED SECTION** on cutting plane E-E of the area in the ellipse shown on the incomplete floor plan.

**Show the following features on the drawing:**

- The complete foundation, kitchen step, external wall and door detail
- The roof detail, including the fascia board and gutter
- The kitchen step wall, window frame and fascia board below (south of) cutting plane E-E
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.

**Label the following:**

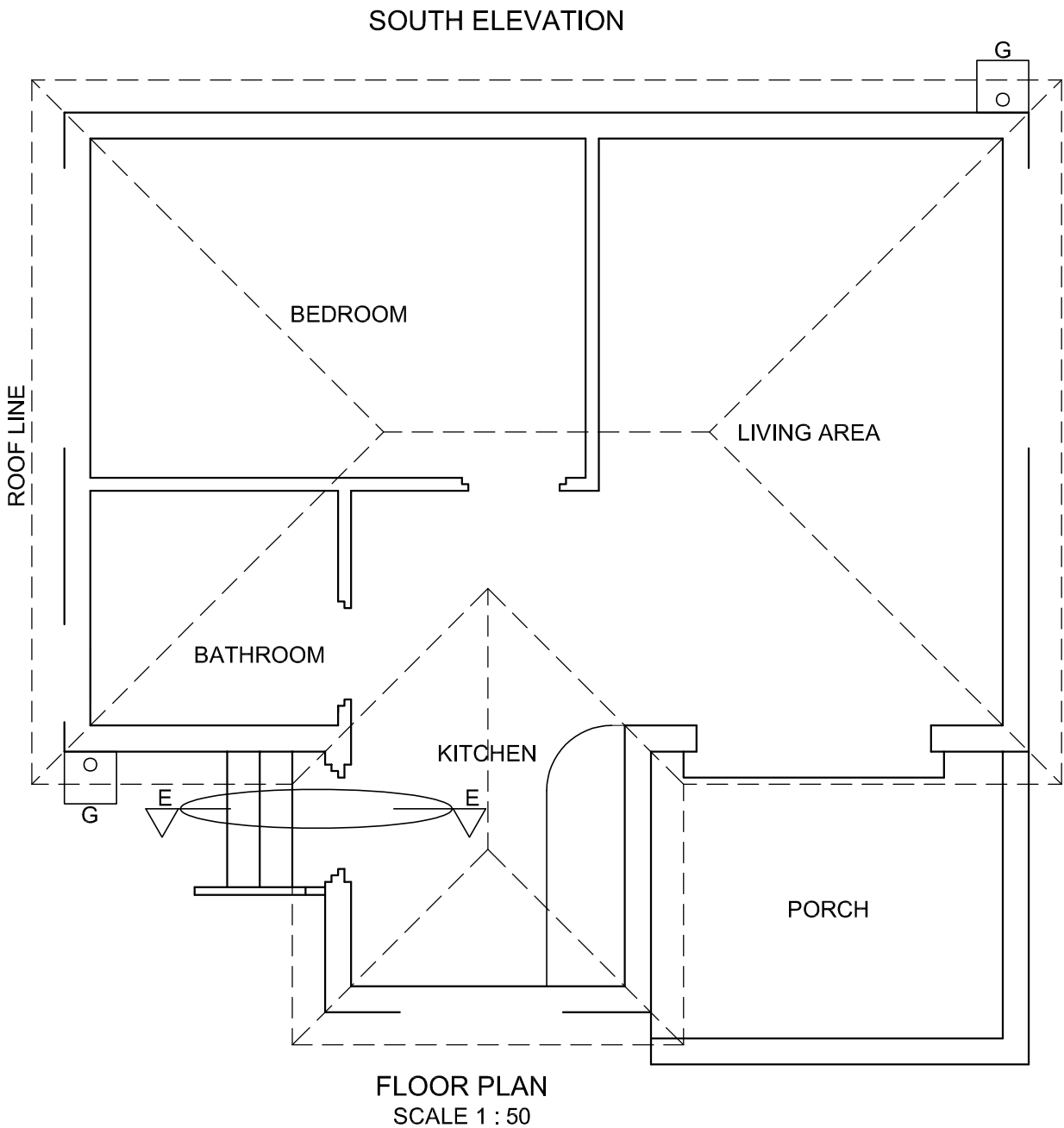
- The floor finishes
- Ground level and damp-proof course (use the correct abbreviations and show them on ALL the relevant views)

**NOTE:**

- ALL drawings must comply with the **guidelines** and **graphical symbols** as contained in the *SANS 10143*.
- NO hidden detail is required.

[92]

5



SECTION ON E-E  
SCALE 1 : 20

| MARK ALLOCATION FOR SECTION OF ROOF |  |  | FOR OFFICIAL USE ONLY      |  |  |  |
|-------------------------------------|--|--|----------------------------|--|--|--|
| A                                   |  |  | INCORRECT SCALE(S) USED    |  |  |  |
| B                                   |  |  | NON-ALIGNMENT OF VIEWS     |  |  |  |
| C                                   |  |  | VIEW(S) ROTATED            |  |  |  |
| D                                   |  |  | SECTION VIEWED INCORRECTLY |  |  |  |
| E                                   |  |  | INCORRECT LETTERING        |  |  |  |
| F                                   |  |  |                            |  |  |  |
| G                                   |  |  |                            |  |  |  |
| H                                   |  |  |                            |  |  |  |
| J                                   |  |  |                            |  |  |  |
|                                     |  |  |                            |  |  |  |
| TOTAL                               |  |  | TOTAL                      |  |  |  |

| ASSESSMENT CRITERIA |                      |                  |          |      |           |
|---------------------|----------------------|------------------|----------|------|-----------|
| FLOOR PLAN          |                      |                  |          |      |           |
|                     |                      | POSSIBLE         | OBTAINED | SIGN | MODERATED |
| 1                   | DOORS + WINDOWS      | 13               |          |      |           |
| 2                   | FIXTURES             | 8                |          |      |           |
| 3                   | ELECTRICAL           | 9                |          |      |           |
| 4                   | HATCHING             | 3                |          |      |           |
| 5                   | LABELS               | 2 $\frac{1}{2}$  |          |      |           |
| SUBTOTAL            |                      | 35 $\frac{1}{2}$ |          |      |           |
| SOUTH ELEVATION     |                      |                  |          |      |           |
| 1                   | ROOF + RWDP + GULLEY | 12               |          |      |           |
| 2                   | WALLS + FFL          | 7                |          |      |           |
| 3                   | DOOR + WINDOW        | 7                |          |      |           |
| 4                   | LABELS               | 1                |          |      |           |
| SUBTOTAL            |                      | 27               |          |      |           |
| DETAILED SECTION    |                      |                  |          |      |           |
| 1                   | ROOF DETAIL          | 11 $\frac{1}{2}$ |          |      |           |
| 2                   | SLAB + WALL + STEP   | 9                |          |      |           |
| 3                   | HATCHING             | 5 $\frac{1}{2}$  |          |      |           |
| 4                   | WINDOW + DOOR        | 2 $\frac{1}{2}$  |          |      |           |
| 5                   | LABELS               | 1                |          |      |           |
| SUBTOTAL            |                      | 29 $\frac{1}{2}$ |          |      |           |
| TOTAL               |                      | 92               |          |      |           |
| PENALTIES (-)       |                      |                  |          |      |           |
| GRAND TOTAL         |                      |                  |          |      |           |
| EXAMINATION NUMBER  |                      |                  |          |      |           |
|                     |                      |                  |          |      |           |
| EXAMINATION NUMBER  |                      |                  |          |      | 6         |



# basic education

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

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

### **ENGINEERING GRAPHICS AND DESIGN P1**

**2023**

### **MARKING GUIDELINES**

**MARKS: 100**

**These marking guidelines consist of 7 pages.**

| ANSWERS |                             |    |
|---------|-----------------------------|----|
| 1       | 84-0213                     | 1  |
| 2       | EXPRESS PRINTERS            | 1  |
| 3       | PALISADE                    | 1  |
| 4       | STONE HILL                  | 1  |
| 5       | 1 : 900                     | 1  |
| 6       | COMPUTER CENTRE / -BUILDING | 1  |
| 7       | 4                           | 1  |
| 8       | ASPHALT                     | 1  |
| 9       | INSPECTION EYE              | 1  |
| 10      | PALM TREE                   | 1  |
| 11      | GENERATOR                   | 1  |
| 12      | EAST                        | 1  |
| 13      | 7500 I                      | 2  |
| 14      | 100-YEAR FLOOD LINE         | 2  |
| 15      | WATER CLOSET                | 1  |
| 16      | BLACK                       | 1  |
| 17      | 18,6                        | 2  |
| 18      | See below                   | 3  |
| 19      |                             | 3  |
| 20      |                             | 4  |
| TOTAL   |                             | 30 |

**ANSWER 18**

Show ALL calculations.

ADDING OF SIDES (+, +, ...), i.e.: ✓

$$P = GD + DE + EF + FG$$

$$= (50.5 + 33.4 + 36.6 + 30.4) - (3 \times 4)$$

$$= 138.9 \text{ m}$$

✓  
CONVERTED TO METERS**ANSWER 19**

Show ALL calculations.

APPLYING CORRECT FORMULA, i.e.: ✓

$$A = L \times B$$

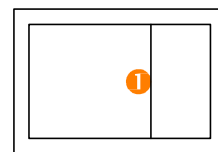
$$= [(21 \times 25) + (29 \times 7)] - (11 \times 18)$$

$$= 728 - 198$$

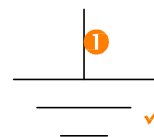
$$= 530 \text{ m}^2$$

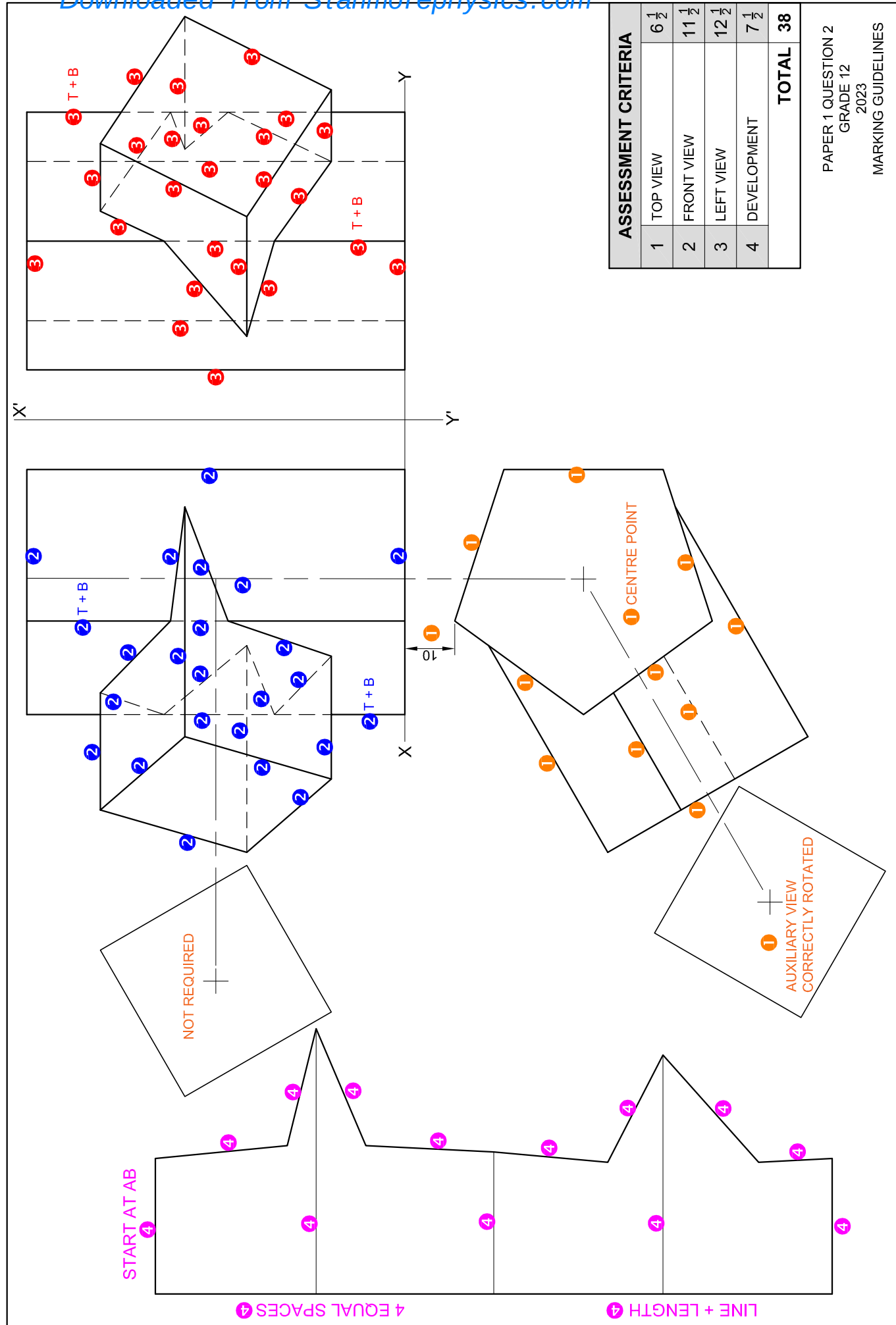
**ANSWER 20**

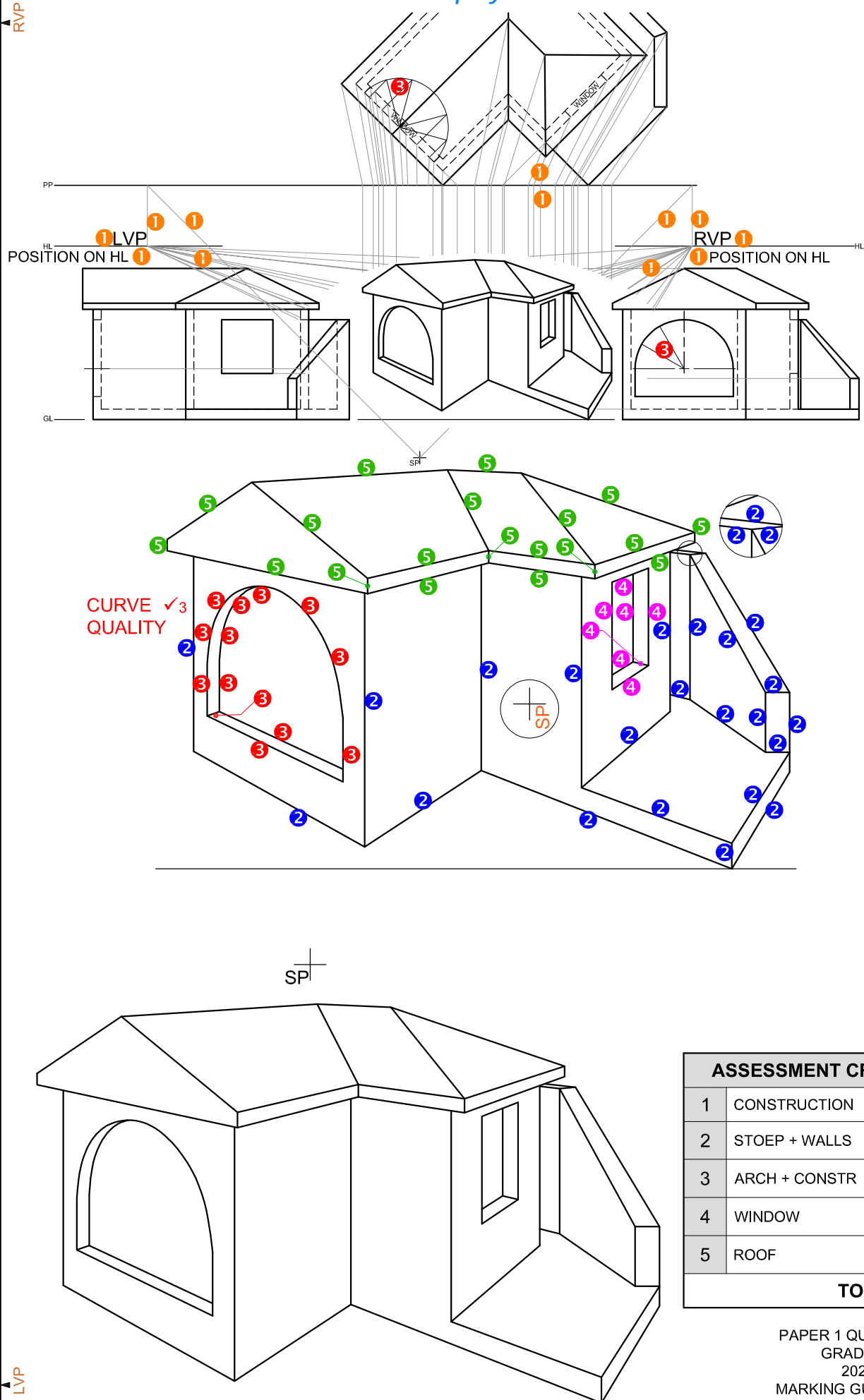
20.1

OUTER RECTANGLE ✓  
INNER RECTANGLE ①

20.2

① FREEHAND  
FOR BOTH



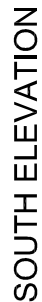




Engineering Graphics and Design/P1 5 SC/NSC - Marking Guidelines

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| ASSESSMENT CRITERIA |                      |    |
|---------------------|----------------------|----|
| SOUTH ELEVATION     |                      |    |
| 1                   | ROOF + RWDP + GULLEY | 12 |
| 2                   | WALLS + FFL          | 7  |
| 3                   | DOOR + WINDOW        | 7  |
| 4                   | LABELS               | 1  |
| SUBTOTAL            |                      | 27 |

PAPER 1 QUESTION 4  
GRADE 12  
2023  
MARKING GUIDELINES

**3. HATCHING ALLOCATION**

SANS COMPLIANT



0,5

HATCHING CORRECTLY APPLIED

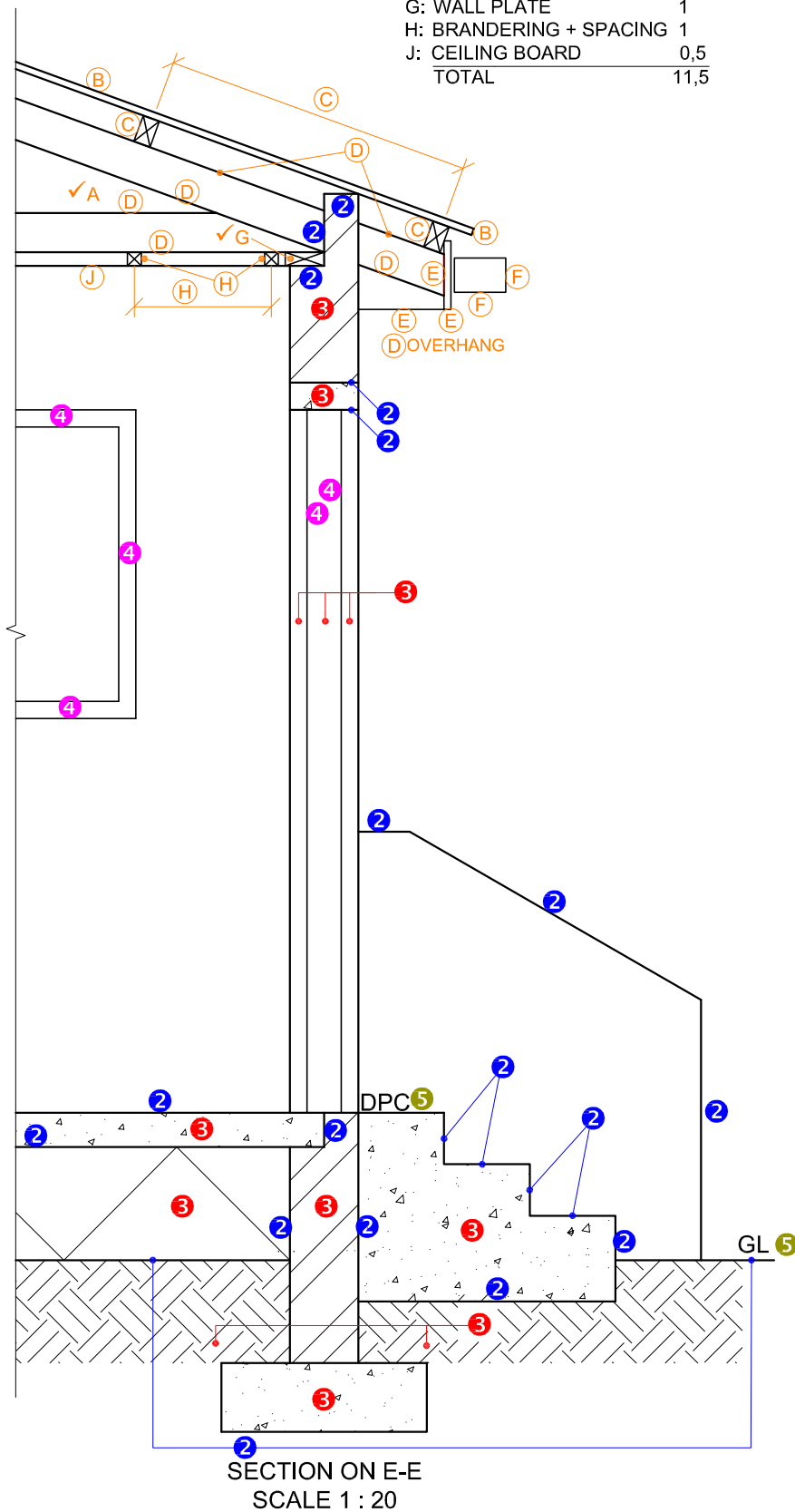
0,5

TOTAL

1

**1. MARK ALLOCATION FOR ROOF**

|                         |             |
|-------------------------|-------------|
| A: ROOF ANGLE           | 1           |
| B: ROOF SHEET           | 1           |
| C: PURLIN + SPACING     | 1,5         |
| D: TRUSS + OVERHANG     | 3           |
| E: FACIA                | 1,5         |
| F: GUTTER               | 1           |
| G: WALL PLATE           | 1           |
| H: BRANDERING + SPACING | 1           |
| J: CEILING BOARD        | 0,5         |
| <b>TOTAL</b>            | <b>11,5</b> |

**ASSESSMENT CRITERIA****DETAILED SECTION**

|                 |                    |                                    |
|-----------------|--------------------|------------------------------------|
| 1               | ROOF DETAIL        | 11 $\frac{1}{2}$                   |
| 2               | SLAB + WALL + STEP | 9                                  |
| 3               | HATCHING           | 5 $\frac{1}{2}$                    |
| 4               | WINDOW + DOOR      | 2 $\frac{1}{2}$                    |
| 5               | LABELS             | 1                                  |
| <b>SUBTOTAL</b> |                    | <b>29 <math>\frac{1}{2}</math></b> |

PAPER 1 QUESTION 4  
GRADE 12  
2023  
MARKING GUIDELINES