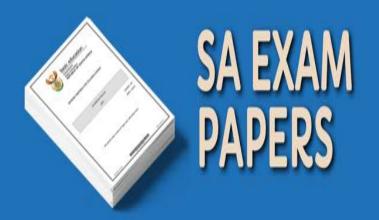


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NATIONAL SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1 SEPTEMBER 2021

PREPARATORY EXAMINATION

MARKS: 200

TIME: 3 hours

This question paper consists of 6 pages.

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INSTRUCTIONS AND INFORMATION

- 1. The question paper consists of FOUR questions.
- 2. Answer ALL the questions.
- 3. All drawings must be drawn to scale 1:1, unless otherwise stated.
- 4. The questions must be answered on the answer sheets provided.
- 5. All the answer sheets must be re-stapled in numerical sequence and handed in irrespective of whether the question was attempted or not.
- 6. Careful time management is essential in order to complete all the questions.
- 7. Print your name in the block provided on every ANSWER SHEET.
- 8. All answers must be drawn accurately and neatly.
- Any details or dimensions not given, must be estimated in good proportion.
- 10. ALL drawings are in first angle orthographic projection, unless stated otherwise.

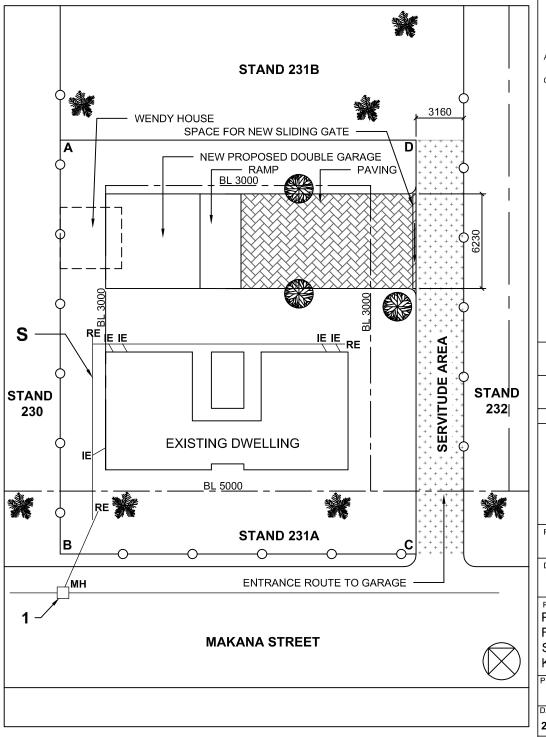
| FOR OFFICIAL USE ONLY | | | | | | | | |
|-----------------------|---|---|---|--|-------------------|---|---|--|
| | | | | | MODERATED MARK | | | |
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| TOTAL | | | | | | | | |
| | 2 | 0 | 0 | | 2 | 0 | 0 | |

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

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

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| SYMBOL LEGEND | | | | | |
|---------------|--|--------------------|--|--|--|
| 1 | | GRAVEL ROAD | | | |
| 2 | | SAFETY FENCE | | | |
| 3 | | INDIGENOUS TREE | | | |
| 4 | | PALM TREE | | | |



LAND SURVEYOR'S CERTIFICATE OF THE SIDE LENGTHS AND CORNER HEIGHTS OF STAND 321A SURVEYED ON 2020-12-02

| SURVEYED ON 2020-12-02 | | | | | | |
|------------------------|-------------------|--|--|--|--|--|
| LENGTHS IN | CORNER HEIGHTS IN | | | | | |
| MILLIMETRES | METRES | | | | | |
| AB = 28200 | A = 434 | | | | | |
| BC = 23530 | B = 431 | | | | | |
| CD = 28200 | C = 430 | | | | | |
| AD = 23530 | D = 433 | | | | | |

NOTE

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

ARCHITECT'S SIGNATURE

ANSWER 15

The feature indicated by arrow **S** is a sewer line. Draw in the space below, in neat freehand according to the SANS 10143 the correct line type to be used.

| 2 | | |
|----------|------------|--|
| 1 | 2021-04-01 | Indicate the finish of the servitude area. |
| REVISION | DATE | DESCRIPTION |

JOSHUA JANJIES
ENGINEERS & ARCHITECTS
17 RUPPING STREET
KIRKWOOD
083 226 7782
josh.architect@hotmail.com

PRINTED BY: DATE OF PRINT:
BLUEDEVILLE 2021-02-21

DRAWING TITLE:

SITE PLAN

PROPOSED NEW DOUBLE GARAGE FOR MR STEPHANUS HEYNS STAND 231A, MAKANA STREET, KIRKWOOD

| PROJECT NUM | BER: | DRAWING NUMBER: | | |
|-------------|---------------|-----------------|--------|--|
| 02-20 | 21 | KDH05-2021 | | |
| DATE: | DRAWN: | CHECKED: | SCALE: | |
| 2020-11-15 | KEENAN | JAMIE | 1:250 | |
| REFERENCE C | ODE: | DRAWING NO.: | | |
| SITE- | SITE- 231A-21 | | F 5 | |

QUESTION 1: ANALYTICAL (CIVIL)

Given:

The site plan for an existing dwelling with a proposed new double garage, a title block and a table of questions. The drawing has not been prepared to the indicated scale.

Instructions:

Complete the table below by neatly answering the questions which refer to the accompanying drawing and title block. [25]

| | QUESTIONS | ANSWER | RS | | |
|----|--|------------------------------|----|--|--|
| 1 | Who is the owner of stand 231A? | | 1 | | |
| 2 | On what date was the site plan printed? | | 1 | | |
| 3 | What scale is indicated for the drawing? | | 1 | | |
| 4 | On what date was the dimensions and heights of stand 231A verified? | | 1 | | |
| 5 | What new structure is proposed for stand 231A? | | 1 | | |
| 6 | Name the feature at 1. | | 1 | | |
| 7 | Which elevation of the existing dwelling faces Makana Street? | | 2 | | |
| 8 | In what colour must the new building on the stand be presented? | | 1 | | |
| 9 | What is the lenght of the specified opening for the new gate in meters? | | 1 | | |
| 10 | How many palm trees are on stand 231A? | | 1 | | |
| 11 | What is the servitude area used for? | | 2 | | |
| 12 | The municipality instructed the owner to demolish the wendy house before he decided to build the new garage. What would the reason be? | | 2 | | |
| 13 | The owner wants to erect a security fence and sliding gate borderline of stand 231A. In the space below (ANSWER 13 security fence needed, in meters. | | 3 | | |
| 14 | In the space provided below (ANSWER 14), determine the 231A in square metres. | total building area of stand | 5 | | |
| 15 | The feature indicated by arrow S is a sewer line. Draw in the (ANSWER 15), in neat freehand according to the SANS 10 used. | | 2 | | |
| | | TOTAL | 25 | | |

ANSWER 13

Show ALL calculations.

ANSWER 14

Show ALL calculations.

| | NAME | |
|---|------|---|
| Ī | | |
| | NAME | 2 |

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QUESTION 2: INTERPENETRATION AND DEVELOPMENT

Given:

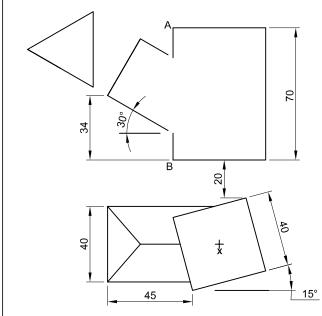
- The top view and incomplete front view of a regular triangular pipe penetrating a square pipe.
- Starting point **X**, the centre of the main pipe (vertical pipe) in the top view.
- **AB** is the seam of the square pipe.

Instructions:

Draw to scale 1 : 1, the following views of the interpenetrating pipes:

- 2.1 The top view.
- 2.2 The complete front view clearly showing the curve of interpenetration.
- 2.3 The development of the surface of the square pipe with **AB** as the seam.
- Show ALL hidden detail and folding lines.
- Show ALL necessary construction lines.

[29]



+ x

| | ASSESSMENT CRITERIA | | | | | |
|----|---------------------|----|--|--|--|--|
| 1 | TOP VIEW | 6 | | | | |
| 2 | FRONT VIEW | 9 | | | | |
| 3 | CONSTRUCTION | 3 | | | | |
| 4 | DEVELOPMENT | 11 | | | | |
| PE | PENALTIES (-) | | | | | |
| | TOTAL 29 | | | | | |

| NAME | |
|------|---|
| | |
| NAME | 3 |

QUESTION 3: PERSPECTIVE

Given:

• Two views of a braai area and the information needed to draw a two-point perspective drawing.

PP - Picture plane

HL - Horizon line

GL - Ground line

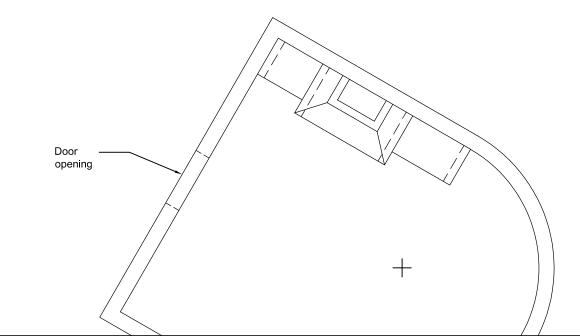
SP - Station point

Instructions:

Complete the perspective drawing.

- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL necessary construction.
- NO hidden detail is required.

[45]



| | ASSESSMENT CRITERIA | | | | | | |
|---|--------------------------|----|--|--|--|--|--|
| 1 | CONSTRUCTION AND VP's | 6 | | | | | |
| 2 | WALLS AND DOOR | 9 | | | | | |
| 3 | BRAAI AREA | 27 | | | | | |
| 4 | ARCH AND CONSTRUCTION | 3 | | | | | |
| | PENALTIES (-) | | | | | | |
| · | TOTAL | 45 | | | | | |

PP

PP



4

NAME

NAME

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QUESTION 4: CIVIL DRAWING

Given:

- The incomplete north elevation of a house, showing the walls, sliding door, window openings, the roof and notes.
- The incomplete floor plan showing roof line, walls, steps, position of the doors, windows, fixtures and the electrical layout
- A schematic diagram of the roof truss and roof notes.
- The incomplete foundation and external wall detail.
- Room designations and floor finishes.
- A door and window schedule.
- A table of sanitary fixtures.
- A table of roof components.
- A table of electrical symbols.
- A table of rainwater items.
- The incomplete floor plan of the **house**, drawn to scale 1:50, the steps of the kitchen and breakline of the detailed section, drawn to scale 1:20 on page 6.

Instructions:

Answer this question on page 6.

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

4.1.1 THE COMPLETE FLOOR PLAN

Add the following features to the drawing:

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

4.1.2 THE COMPLETE NORTH ELEVATION

Show the following features on the drawing:

- Use the step as starting point.
- The outside walls, steps, porch, slidingdoor and window detail.
- The roof detail, including the barge boards, fascia boards, ridge cover, gutter and rainwater down-pipe.
- The finished floor level.
- 4.2 In the space provided on page 6, using the steps, as starting point, and the break line, draw, to scale 1:20, a **DETAILED SECTION** on cutting plane **A-A** of the area in the ellipse shown on the incomplete floor plan.

Show the following features on the drawing:

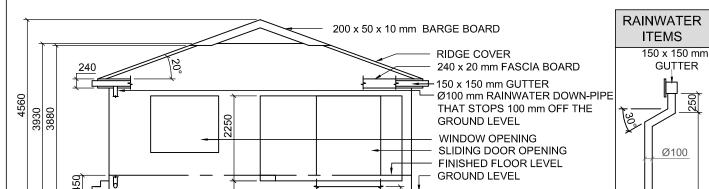
- The complete foundation and external wall detail
- The door detail and kitchen window
- The sink
- The roof detail, including the fascia board and
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.

Label the following:

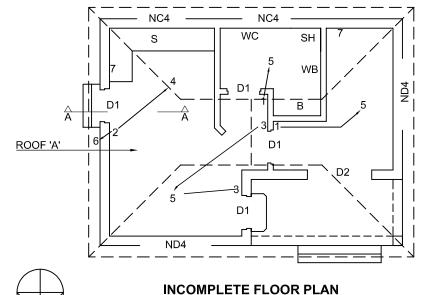
- The north elevation.
- The room designations and floor finishes.
- Ground level, finished floor level and damp proof course (use the correct abbreviations and show it on ALL the relevant views)

NOTE:

ALL drawings must comply with the guidelines and graphical symbols as contained in the SANS 10143.



INCOMPLETE NORTH ELEVATION



Starting point

ROOF NOTES:

20° ROOF PITCH.

FEATURES

D1 + D2 DOORS NC4 + ND4 WINDOWS

FIXTURES

wc TOILET WASH BASIN WB

BATH

S SINK SH

SHOWER

ELECTRICAL FITTINGS

1. ONE-WAY SWITCH - SINGLE-POLE 2. ONE-WAY SWITCH - DOUBLE-POLE

3. TWO-WAY SWITCH

4. FLUORESCENT LIGHT 3 x 40 W 5. CEILING LIGHT

6. WALL-MOUNTED LIGHT

7. SWITCHED SOCKET OUTLET

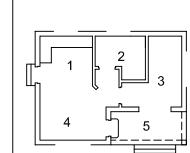
NOTE:

THE ARROWS ON THE FLOOR PLAN SHOW THE LIGHT CONNECTION TO THE SWITCH.

2 X 120 x 100 mm LINTELS

ABOVE ALL ARCH, DOOR AND

WINDOW OPENINGS



1. KITCHEN:

2 BATHROOM.

3. BEDROOM:

GUTTER

Ø100

100

TO FIT

DOOR (D1)

WINDOW NOTES

A = OPENING SIDE

ROOM DESIGNATIONS

AND FLOOR FINISHES

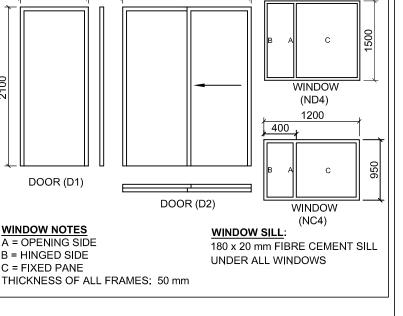
TILES

TILES

CARPET

B = HINGED SIDE

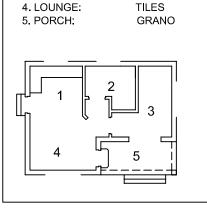
C = FIXED PANE

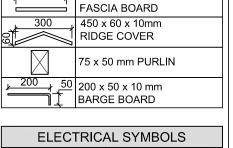


600

DOOR AND WINDOW SCHEDULE

TO FIT





ROOF COMPONENTS

240 x 20 mm

