

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

ENGINEERING GRAPHICS AND DESIGN P1

2022

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.

Barcode label	
	١

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	MARK	(S OBT	AINED	<u>1</u>	SIGN	МО	DERAT	ED	1/2	SIGN	RE-	-MARKI	NG	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

DBE/2022 Engineering Graphics and Design/P1 SC/NSC

	SURVEYOR'S RNIER HEIGHT LENIGTHS (SAND	· - - · · · · ·
	ER HEIGHTS METRES	_	BOUNDARY THS IN METRES
Α	21	AB	117,7
В	19	вс	13,7
С	18,8	CD	115,1
D	18,8	DE	8,3
Е	?	EF	88,3
F	17,3	FG	39,7
G	17,7	GA	102,8

(3)

STAND 110

STAND 108

EXISTING BUILDING

PROPOSED HOSP TAL

7500 BL

MUNCHEN STREET

SIGNAGE

WALL TO

ENGINEER'S

SPECIFICATIONS

GUARD-

HOUSE

5,8 m WIDE

VEHICLE

ENTRANCE

SITE PLAN

SCALE 1:1300

SYMBOL LEGEND:

1. PALM TREE



2 EVERGREEN TREE



3. BRICK **PAVING**

4. INTERNIAL

FENICE. 5. 2 m H**I**GH **BOUNDARY FENICE**

6 PARKING FOR DISABLED PEOPLE

3000 BL



NEW

WATER TANK

(5)

22

20

(6)

DORTMUND

7500 BL

SUB-

STATION

NOTE:

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

ARCHITECT'S SIGNATURE

20_1 NORTH POINT

CLIENT'S SIGNATURE .

ANSWER 20

In the space below, draw, in neat freehand, the SANS 10143 graphical symbol for a: 20.1 NORTH POINT 20_2 TWO-WAY SWITCH

20 2 TWO-WAY SWITCH	

1	2021-09-20	ADD PARKING FOR DISABLED PEOPLE
REVISION	DATE	DESCRIPTION

MULLER ARCHITECTS 63 ALLIANZ ROAD **NEW GERMANY**

www.cart.arch.co.za 098 765 4321 4001

PRINTED BY:	DATE OF PRINT:
CREATE PRINTERS (PTY) LTD	2021-09-30

DRAWING TITLE:

SITE PLAN

PROJECT:

PROPOSED NEW HOSPITAL FOR DR W ZULU & PARTNERS ON STAND 108, 7 MUNCHEN STREET, SYRINGER, 4002

PROJECT NUM	BER:	DRAWING NUMBER:			
CR 2020	00401 - 7	001 - TU			
DATE:	DRAWN:	CHECKED:	SCALE:		
2021-09-13	EINSTEIN	PLATO	1:1300		
REFERENCE C					

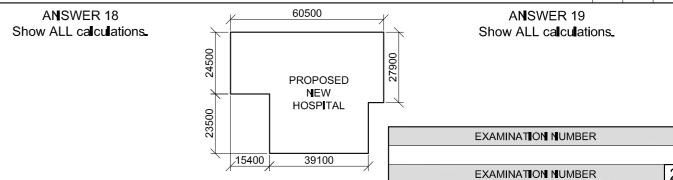
QUESTION 1: ANALYTICAL (CIVIL)

The site plan of a proposed new hospital, 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 reference code of the drawing?	1							
]	2	What scalle is indicated for the site plan?	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							
	3	With reference to the title panel, what does CR 20200401 – 7 refer to?	1							
	4	What architectural firm was responsible for the design of the new hospital?	1							
	5	What does the arrow on the sliding gate into Munchen Street indicate?	1							
	6	What does the abbreviation RE at 1 stand for?	1							
	7	What is the height of the boundary fence in millimetres?	1							
	8	Name the feature at 2₌	1							
	9	Name the feature at 3. ■	1							
	10	What must happen to the existing building at 4?	1							
	11	What finish is required at 5?	1							
	12	Name the feature at 6. ■	1							
	13	What does the symbol at 7 indicate?	1							
DR LE	14	What is the shortest distance from the proposed new hospital building to boundary line AB in metres?	2							
	15	What colour is used to represent new wood on sectional elevations and floor plans?	1							
	16	What is the height of corner E in metres?	2							
za	17	Which elevation of the proposed new hospital entrance faces Dortmund Avenue?	2							
	18	In the space below (ANSWER 18), determine the perimeter of STAND 108 in metres.	3							
	19	In the space below (ANSWER 19), determine the total area of the proposed new hospital building in square metres.	3							
DR LE	20	In the space provided in the title panel (ANSWER 20), draw, in neat freehand, the SANS 10143 graphical symbol for a: (20.1) NORTH POINT and (20.2) TWO-WAY SWITCH.	4							
		TOTAL	30							



(1)

DETAIL

Qr.

(7)

MEW 1.5 m

PEDESTRIAN

PAVEMENT

WITH.

ASPHALT

FINISH



QUESTION 2: SOLID GEOMETRY

Given:

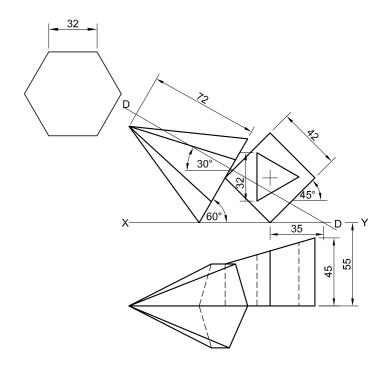
- The front view and the top view of a right regular hexagonal pyramid resting with its base on an edge of a truncated right square prism. The prism is centrally pierced by a right equilateral triangular prismatic hole.
- An auxiliary view of the base of the hexagonal pyramid
- Both solids are cut by cutting plane D-D

Instructions:

Draw, to scale 1: 1, the following views of both solids:

- 2.1 The given front view
- 2.2 A sectional top view on cutting plane D-D
- 2.3 The left view
- 2.4 The true shape of the cut surface of the truncated prism
- Planning is essential.
- Show ALL hidden detail.
- Show ALL construction.

[40]



	ASSESSMENT CF	RITE	AIS	
1	FRONT VIEW	7 ½		
2	SECTIONAL TOP VIEW	14		
3	LEFT VIEW	$12\frac{1}{2}$		
4	TRUE SHAPE	6		
PENA	ALTIES (=)			
	TOTAL	40		
	EXAMINATION NU	MBER		
	EXAMINATION NU	MBER		3

Copyright reserved

Please turn over

Given:

Three views of a dwelling and the information needed to draw a two-point perspective drawing PP – Picture p**l**ane

QUESTION 3: PERSPECTIVE

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 depth at the doors and windows.
- NO hidden detail or interior detail is required.

[38]

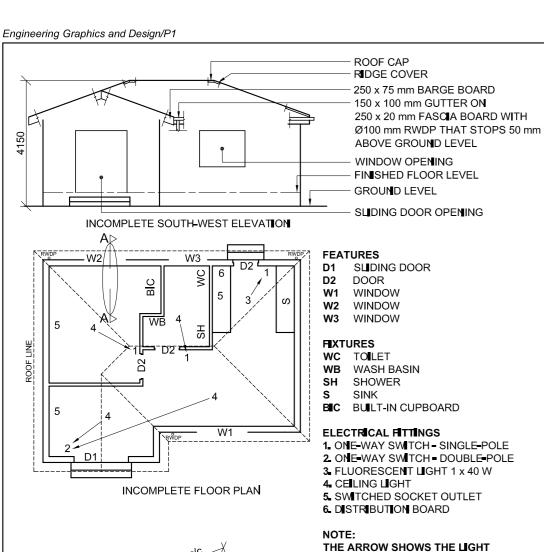
		ASSESSMENT C	RITER	AF	
1		CONSTRUCTION	6		
2	2	WALLS	11 ½		
3	3	ROOF	5		
4	1	WINDOWS	10		
5	5	GARAGE	$5\frac{1}{2}$		
Р	EN	ALTIES (-)			
		TOTAL	38		·

EXAMINATION NUMBER

EXAMINATION NUMBER

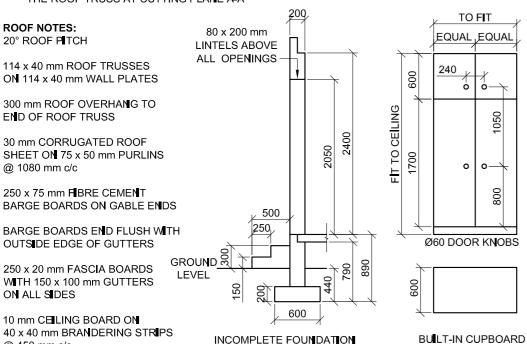


PP-



1080 clc / 1080 clc /

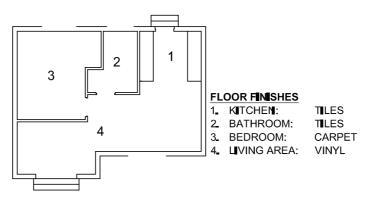
SCHEMATIC DIAGRAM OF A SECTION OF THE ROOF TRUSS AT CUTTING PLANE A-A

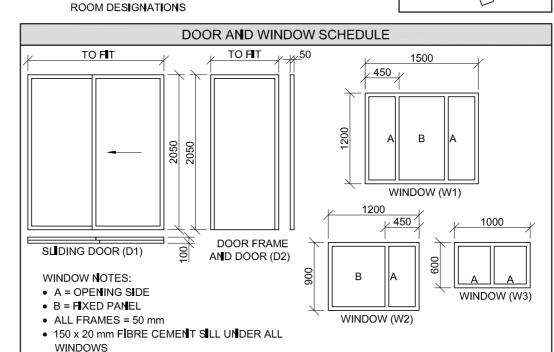


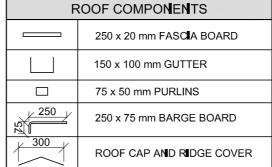
AND EXTERNAL WALL DETAIL

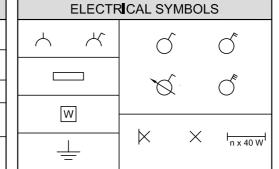
CONNECTION TO THE SWITCH.

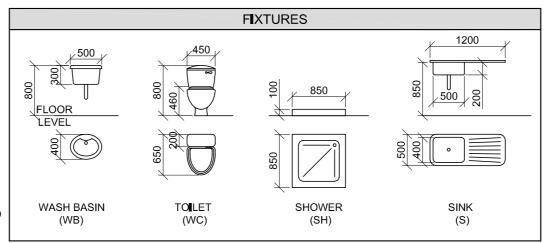
DETAIL











QUESTION 4: CIVIL DRAWING

Given:

RAINWATER ITEMS

Ø100

- The incomplete south-west elevation of a new house, showing the walls, the window opening, the sliding door opening, the roof and labels
- The incomplete floor plan showing the walls, roof line, positions of the doors, windows and fixtures, as well as the electrical layout
- A schematic diagram of a section of a roof truss at cutting plane A-A and roof notes
- The incomplete foundation and external wall detail
- The built-in cupboard detail
- Room designations and floor finishes
- A table of rainwater items
- A door and window schedule
- A table of roof components
- A table of electrical symbols
- A table of fixtures
- The incomplete floor plan and position of the ground level of the **new house**, drawn to scale 1:50 and the incomplete foundation and a break line 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 and ground level, draw 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 numbers
- ALL hatching detail

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

- The outside walls, steps, window and sliding door detail
- ALL the roof detail, including the fascia board, barge boards, gutters and rainwater downpipe
- The finished floor level
- 4.2 Using the given foundation and break line on page 6, 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, external wall and window detail
- The roof detail, including the fascia board, gutter and rainwater items
- The steps, roof, wall and built-in cupboard detail to the right of cutting plane A-A
- ALL hatching detail. ONLY the substructure may be hatched in neat freehand.

Label the following:

- The south-west elevation
- The floor finishes
- Ground level, finished floor 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*. **[92]**

@ 450 mm c/c

SECTION A-A SCALE 1:20



MARK ALLOCATION FOR SECTION OF ROOF		FOR OFFICIAL USE ONLY			
A	OF ROOF	INCORRECT SCALE(S) USED			
В		NON-ALIGNMENT OF VIEWS			
С					
D		VIEW(S) ROTATED			
Е		SECTION VIEWED			
F					
G		INCORRECT LETTERING			
Н					
J					
TOTAL		TOTAL			

ASSESSMENT CRITERIA					
		FLOOR	PLAN		
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	DOORS + WINDOWS	11			
2	FIXTURES	9			
3	ELECTR I CAL	$9\frac{1}{2}$			
4	HATCHING	3			
5	LABELS	2			
S	UBTOTAL	$34\frac{1}{2}$			
SOUTH-WEST ELEVATION					
1	ROOF + RWDP	9 <u>1</u>			
2	WALLS + STEP + FFL	4 ½			
3	DOOR + WINDOW	8 1 2			
4	LABELS	1			
S	UBTOTAL	23 ½			
DETAILED SECTION					
1	ROOF DETAIL	13			
2	SLAB + WALL + WINDOW + STEP	11 ½			
3	HATCHING	$5\frac{1}{2}$			
4	BIC	$2\frac{1}{2}$			
5	LABELS	$1\frac{1}{2}$			
SUBTOTAL		34			
TOTAL		92			
PENALTIES (=)					
GRAND TOTAL					
EXAMINATION NUMBER					

<u>GL</u>	A \rightarrow
R	RWDP
ROOF LINE	BATHROOM BEDROOM
ROOF	LIVING AREA
	RWDP
	FLOOR PLAN SCALE 1 : 50