basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1

NOVEMBER 2012

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.

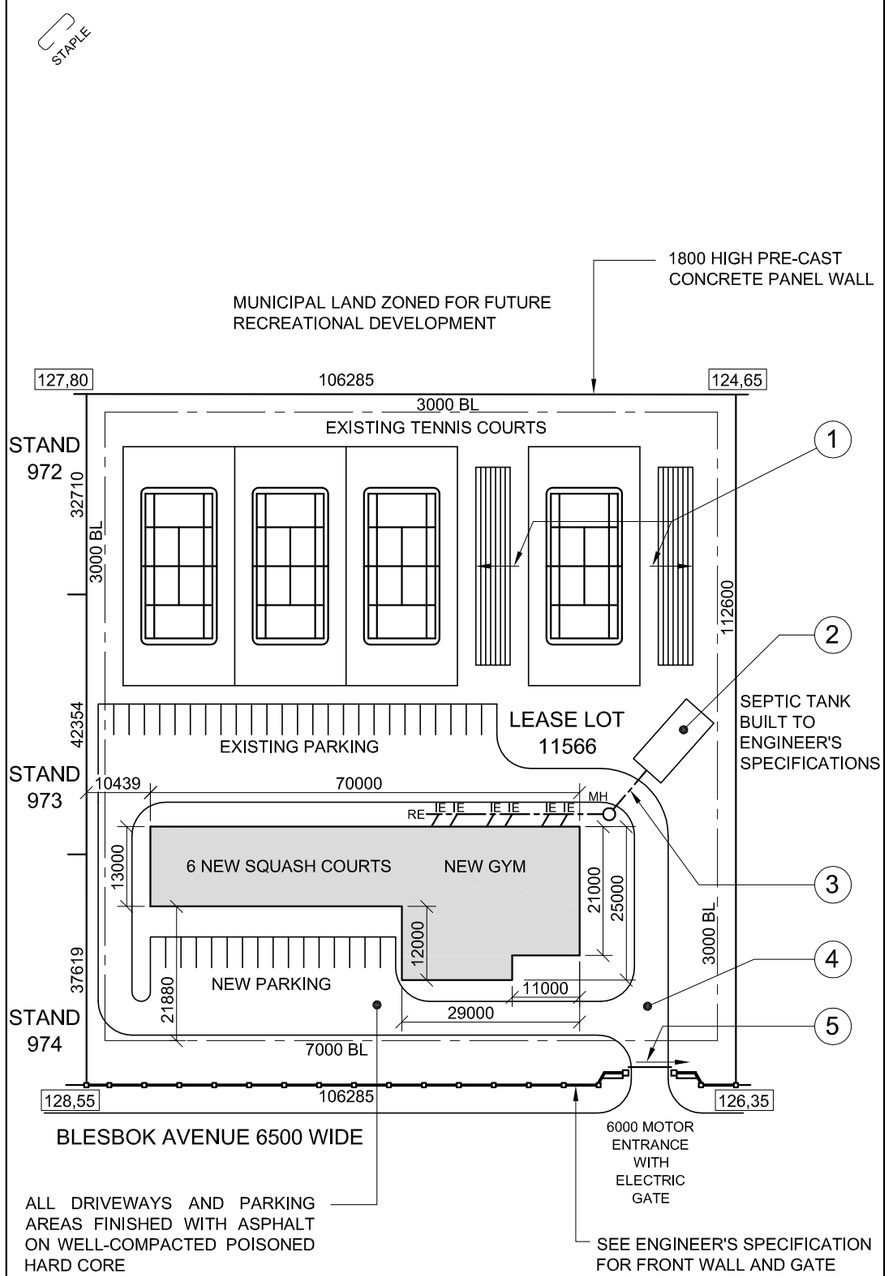
INSTRUCTIONS AND INFORMATION

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 completed using 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 must be re-stapled in numerical sequence, irrespective of whether the question was attempted.
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			½	SIGN	MODERATED			½	SIGN	
1											
2											
3											
4											
TOTAL											
	2	0	0			2	0	0			

FINAL CONVERTED MARK	CHECKED BY
____ 100	

COMPLETE THE FOLLOWING:
CENTRE NUMBER
CENTRE NUMBER
EXAMINATION NUMBER
EXAMINATION NUMBER



SITE PLAN
SCALE 1 : 500

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

20. In the space provided below, draw, in neat freehand, the front view and top view of the *SABS 0143* convention for a bath.

ARCHITECT'S SIGNATURE .....

CLIENT'S SIGNATURE .....

REVISION	DATE	DESCRIPTION

PROJECT NUMBER 83	DRAWN BY LEBO	DATE 14-10-2012
REFERENCE CODE DBE-2012-01	CHECKED BY HOLLY	DATE 15-10-2012
DRAWING NUMBER 1 OF 8	PASSED BY TERTIA	DATE 16-10-2012
PRINTED BY ECHOPRINT	DATE OF PRINT 18-10-2012	

DESIGN FOR LIVING ARCHITECTS
15 WATERKANT STREET
CAPE TOWN
021 555 3434

PROJECT

PROPOSED NEW SQUASH COURTS AND GYM FOR THE BLESBOK AVENUE SPORTS COMPLEX ON LEASE LOT NO. 11566

DRAWING TITLE

SITE PLAN

QUESTION 1: ANALYTICAL (CIVIL)

Given:
The site plan for new squash courts and gym, a title panel 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 all refer to the accompanying drawing and title panel. **[30]**

	QUESTIONS	ANSWERS		
1	What is the name of the company that designed the new squash courts and gym?		1	
2	Who prepared the drawing?		1	
3	On what date was the site plan printed?		1	
4	What is the drawing reference code?		1	
5	What must the contractors do before commencing work on the site?		1	
6	What is the height of the pre-cast concrete panel walls?		1	
7	How many manholes are shown on the site plan?		1	
8	How many new parking bays are shown on the site plan?		1	
9	What do the arrows on the pavilions at 1 indicate?		1	
10	Name the feature at 2.		1	
11	What does the line at 3 indicate?		1	
12	What is the finish on the feature at 4?		1	
13	What does the arrow at 5 indicate?		2	
14	What will the land on the north-eastern side of the sports complex be used for?		2	
15	What is the height of the highest corner on the stand?		2	
16	What does the abbreviation IE stand for?		1	
17	What is the distance from the south-western building line to the new squash courts in millimetres?		2	
18	Determine the perimeter of lease lot 11566 in metres. Show ALL calculations.		3	
19	Determine the total area of the new squash courts and gym building in square metres. Show ALL calculations.		3	
20	In the space provided in the title panel, draw, in neat freehand, the front view and top view of the *SABS 0143* convention for a bath.		3	
	TOTAL		**30**	

EXAMINATION NUMBER	
EXAMINATION NUMBER	2

STAPLE

QUESTION 2: INTERPENETRATION AND DEVELOPMENT

Given:

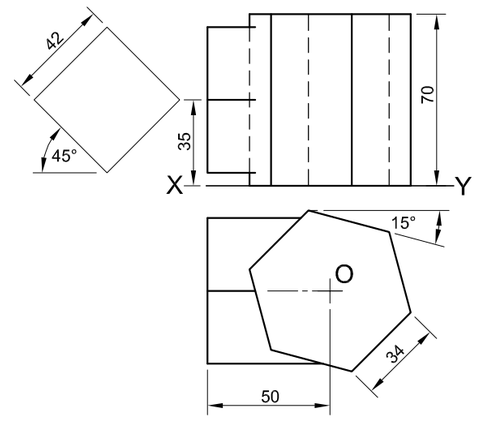
- The incomplete front view and the top view of a regular square prism that has been shaped to fit around a right regular hexagonal prism. The axes of both prisms lie in a common vertical plane.
- The auxiliary view of the square prism
- The position of point O on the drawing sheet

Instructions:

Draw, to scale 1 : 1, the following views of the TWO prisms:

2.1 The given top view
2.2 The left view
2.3 The complete front view, clearly showing the curve of interpenetration
2.4 Develop the surfaces of the square prism.

Show ALL hidden detail and fold lines. **[35]**



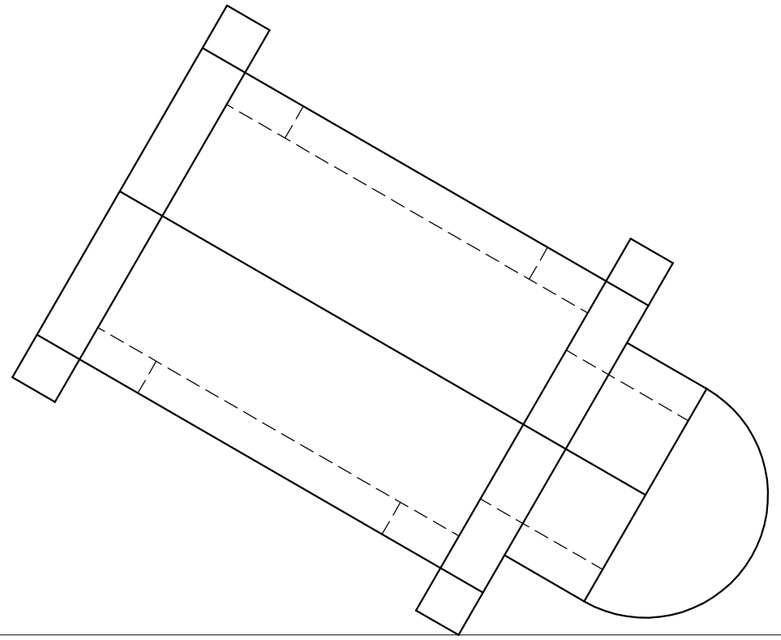
O

ASSESSMENT CRITERIA						
1	TOP VIEW	6				
2	LEFT VIEW	5				
3	FRONT VIEW	14				
4	DEVELOPMENT	10				
TOTAL		**35**				

EXAMINATION NUMBER

EXAMINATION NUMBER 3

STAPLE



QUESTION 3: PERSPECTIVE

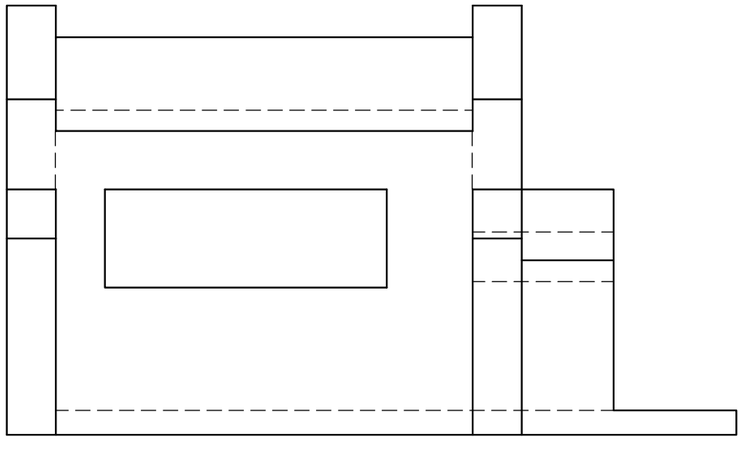
Given:
Three views of a wedding chapel and the information needed to draw a two-point perspective drawing
PP – Picture plane
HL – Horizon line
GL – Ground line
SP – Station point

Instructions:
Complete the perspective drawing.

- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL necessary construction.
- Show the wall thickness at the window.
- NO hidden or interior detail is required. **[41]**

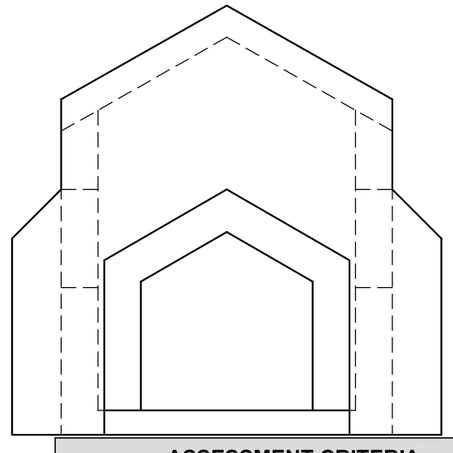
PP

HL



GL

SP

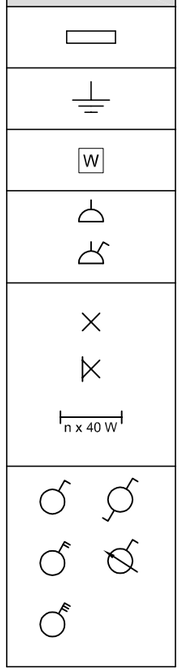


ASSESSMENT CRITERIA					
1	CONSTRUCTION + VPs	6			
2	BUILDING + WINDOW	15			
3	ROOF	7½			
4	ENTRANCE	8			
5	SEMICIRCLE	4½			
	TOTAL	**41**			

EXAMINATION NUMBER

EXAMINATION NUMBER 4

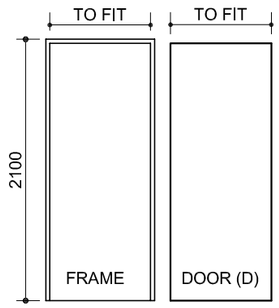
ELECTRICAL SYMBOLS

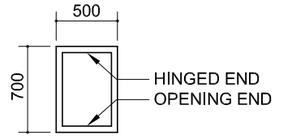


ROOF COMPONENTS

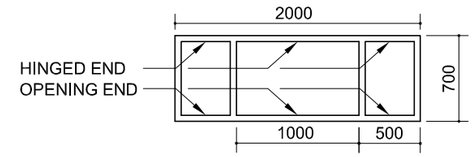
	75 x 50 PURLINS
	115 x 38 WALL PLATE
300	ROOF CAP
	200 x 12 FASCIA BOARD

DOOR AND WINDOW SCHEDULE



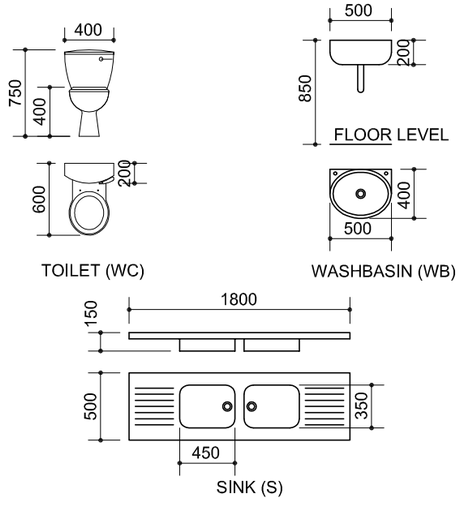


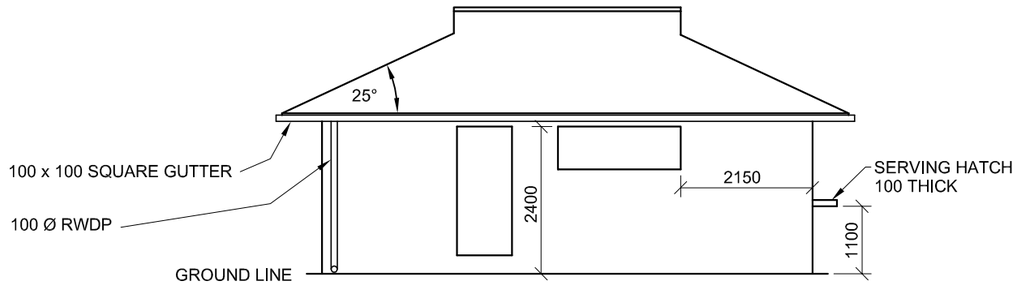
50 x 50 TIMBER WINDOW FRAME (W1)



50 x 50 TIMBER WINDOW FRAME (W2)

DIMENSIONS OF FIXTURES



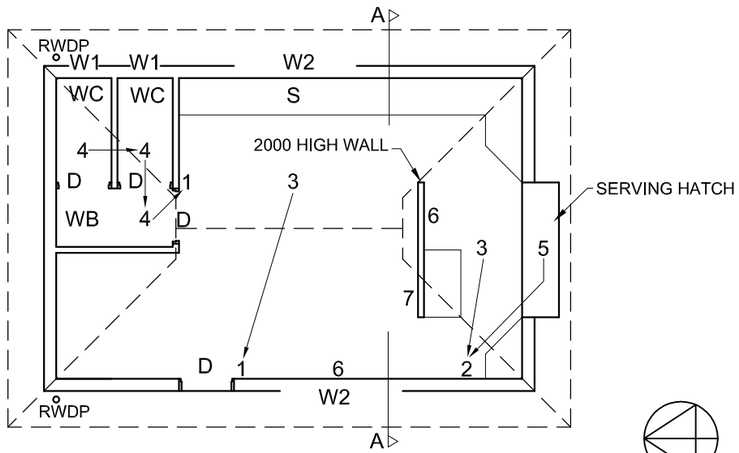


INCOMPLETE WEST ELEVATION

FEATURES
D - DOOR
W1 - WINDOW
W2 - WINDOW

FIXTURES
WC - TOILET
S - SINK
WB - WASHBASIN

ELECTRICAL FITTINGS
1. SINGLE-POLE LIGHT SWITCH
2. TWO-POLE LIGHT SWITCH
3. 3 x 40 W FLUORESCENT TUBES
4. CEILING LIGHT
5. OUTSIDE LIGHT
6. SWITCHED SOCKET OUTLET
7. DISTRIBUTION BOARD
NOTE:
THE ARROWS SHOW THE LIGHT CONNECTION TO THE SWITCH.



INCOMPLETE FLOOR PLAN

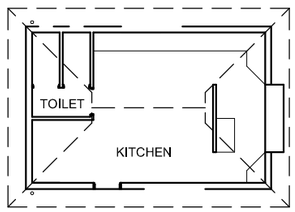
ROOF NOTES:
ROOF COVER 15 mm CORRUGATED IRON SHEET ON 75 x 50 mm PURLINS @ 1100 c/c

ROOF PITCH 25°

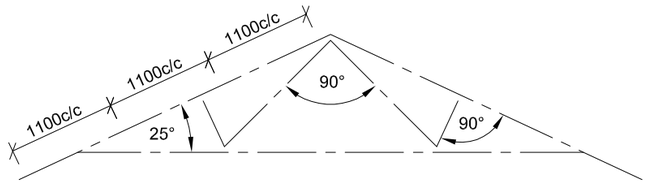
115 x 38 mm ROOF TRUSS ON 115 x 38 mm WALL PLATE

6 mm PLASTER BOARD ON 38 x 38 mm BRANDERING @ 1000 c/c

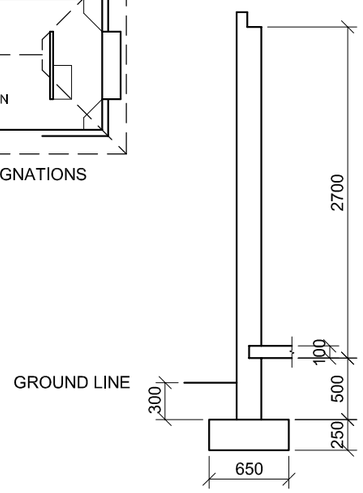
100 mm SQUARE GUTTER AROUND THE BUILDING



ROOM DESIGNATIONS



SCHEMATIC DIAGRAM OF A ROOF TRUSS



INCOMPLETE FOUNDATION AND WALL DETAIL ON A-A

QUESTION 4: CIVIL DRAWING

Given:
- The incomplete west elevation of a new **kitchen and tuck shop** showing the walls, the position of the window, the door, the roof, dimensions and notes
- The incomplete floor plan showing the walls, position of the windows, doors, fixtures and electrical features
- Roof notes and a schematic diagram of a roof truss
- The incomplete foundation and wall detail on cutting plane A-A
- A table of electrical symbols
- A table of roof components
- A door and window schedule
- A table of fixtures
- The incomplete floor plan of the new **kitchen and tuck shop**, drawn to scale 1 : 50, on page 6

Instructions:
- Answer this question on page 6.
- Using the given incomplete floor plan, draw in first-angle orthographic projection and to scale 1 : 50, the following views of the new **kitchen and tuck shop:**
  4.1 The complete floor plan
  4.2 A sectional elevation on cutting plane A-A
  4.3 The west elevation
- ALL drawings must comply with the **guidelines** and **conventions** contained in the *SABS 0143*.

SPECIFICATIONS:
THE 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

THE WEST ELEVATION
Show the following features on the drawing:
- The outside walls
- The roof detail, including the gutter and rainwater downpipe
- The window and door detail
- The finished floor level

THE SECTIONAL ELEVATION
Show the following features on the drawing:
- The complete foundation, wall and roof detail
- The window detail with a double lintel above the window
- The internal wall to the south of cutting plane A-A ONLY
- ALL hatching detail

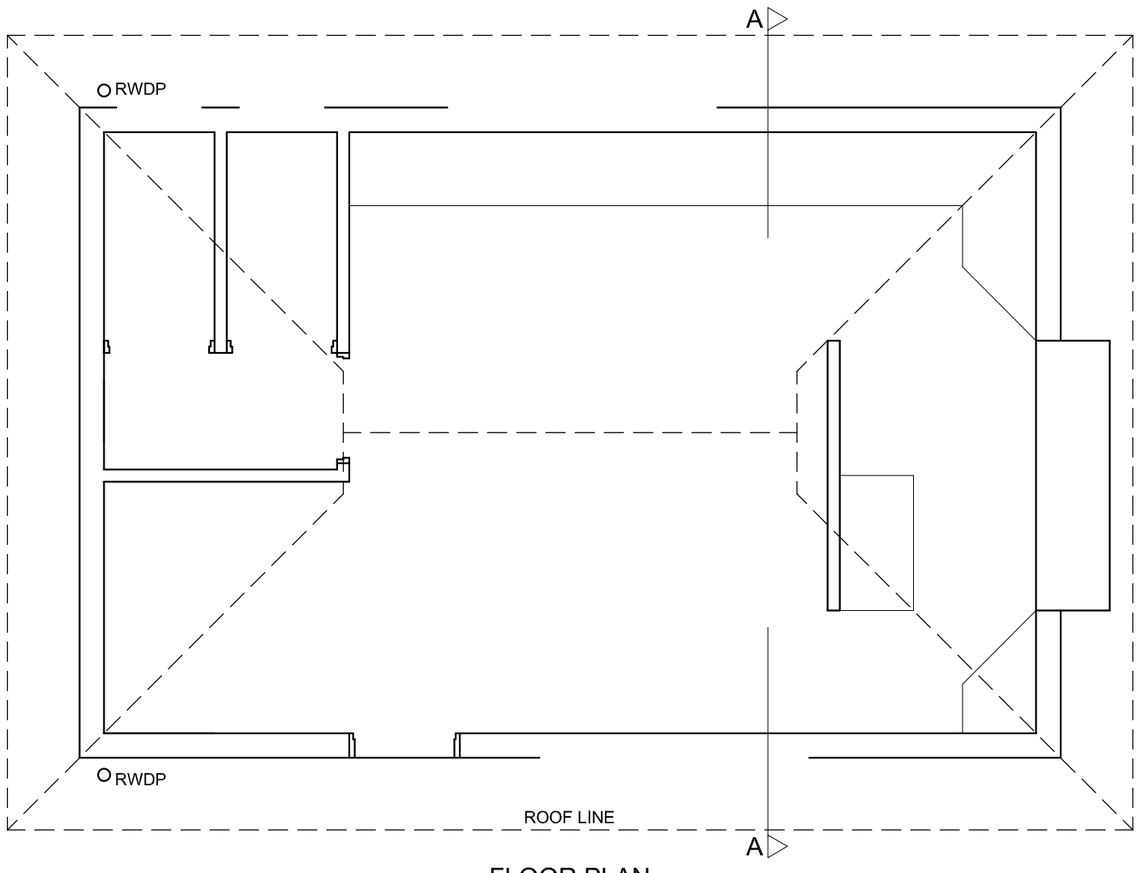
Label the following:
- The room designations and floor finish (tile)
- The west elevation and the sectional elevation
- Using correct abbreviations, label the following features in the correct view: ground level, finished floor level and damp-proof course.

NOTE:
ONLY the substructure hatching may be drawn in freehand.

[94]

STAPLE

NGL



FLOOR PLAN
SCALE 1 : 50

ASSESSMENT CRITERIA					
FLOOR PLAN					
1	ELECTRICAL	9			
2	HATCHING	5			
3	DOORS + WINDOWS	14			
4	FIXTURES	4			
5	LABELS	2			
SUBTOTAL		**34**			
WEST ELEVATION					
1	WALLS + FFL + SERV' HATCH	3½			
2	ROOF + GUTTER +RWDP	7			
3	DOOR + WINDOW	6			
4	LABELS	1½			
SUBTOTAL		**18**			
SECTIONAL ELEVATION					
1	ROOF + CEILING	18			
2	WALLS + FLOOR + FOUNDATION	13			
3	WINDOW	3			
4	HATCHING	5			
5	LABELS	3			
SUBTOTAL		**42**			
TOTAL		**94**			
EXAMINATION NUMBER					
EXAMINATION NUMBER					6