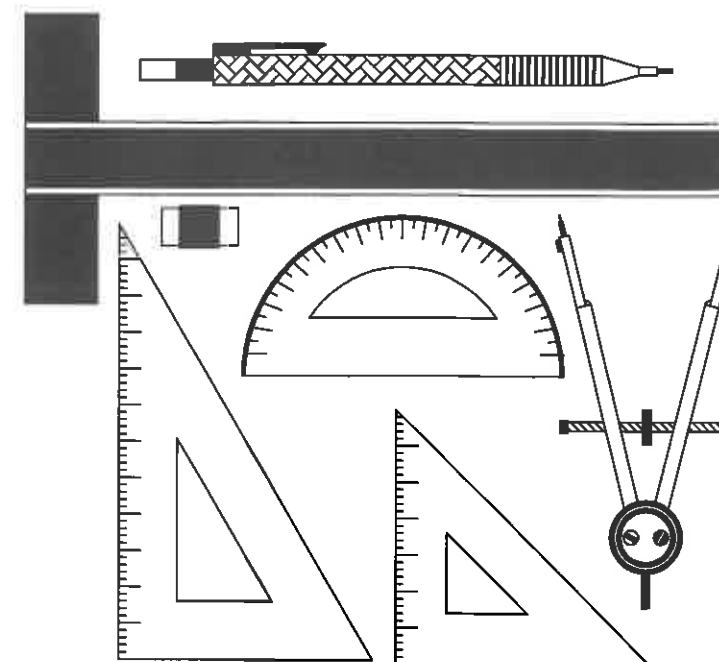




MARKING MEMORANDUM



NATIONAL SENIOR CERTIFICATE EXAMINATION

2016

ENGINEERING GRAPHICS AND DESIGN

PAPER 1

MARKS: 200
TIME: 3 HOURS

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This question paper consists of **6 pages** including the cover page and **4 questions**.
2. **All** questions must be answered.
3. Unless specified otherwise, all questions are in **First-angle Orthographic Projection**.
4. Unless specified otherwise, all questions are to be completed to a **scale of 1:1**.
5. **All** answer sheets must be re-stapled in numerical order, even questions that are not attempted/blank.
6. All **construction work** must be shown.
7. Print your **examination number** neatly on each page.
8. Use only the **answer sheets** provided.
9. Your drawings should reflect **neatness** and **accuracy**.
10. All dimensions or detail not given may be **assumed** in **good proportion**.
11. Your drawings should comply with SANS 10143.

| FOR OFFICIAL USE ONLY | | | | | |
|-----------------------|--------------------------------|------|-----------|---------|------|
| QUESTION | SECTION | MARK | MODERATED | MAXIMUM | CODE |
| 1 | CIVIL ANALYTICAL | | | 20 | |
| 2 | INTERPENETRATION & DEVELOPMENT | | | 40 | |
| 3 | TWO-POINT PERSPECTIVE | | | 40 | |
| 4 | CIVIL DRAWING | | | 100 | |
| SYMBOL | TOTAL | | | 200 | |
| | | | | 100 | |

| | |
|----------------------|------------|
| FINAL CONVERTED MARK | CHECKED BY |
| <u>100</u> | |

EXAMINATION NUMBER

| | | | | | | | | | | | | | | | | | | | |
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QUESTION 1
CIVIL ANALYTICAL

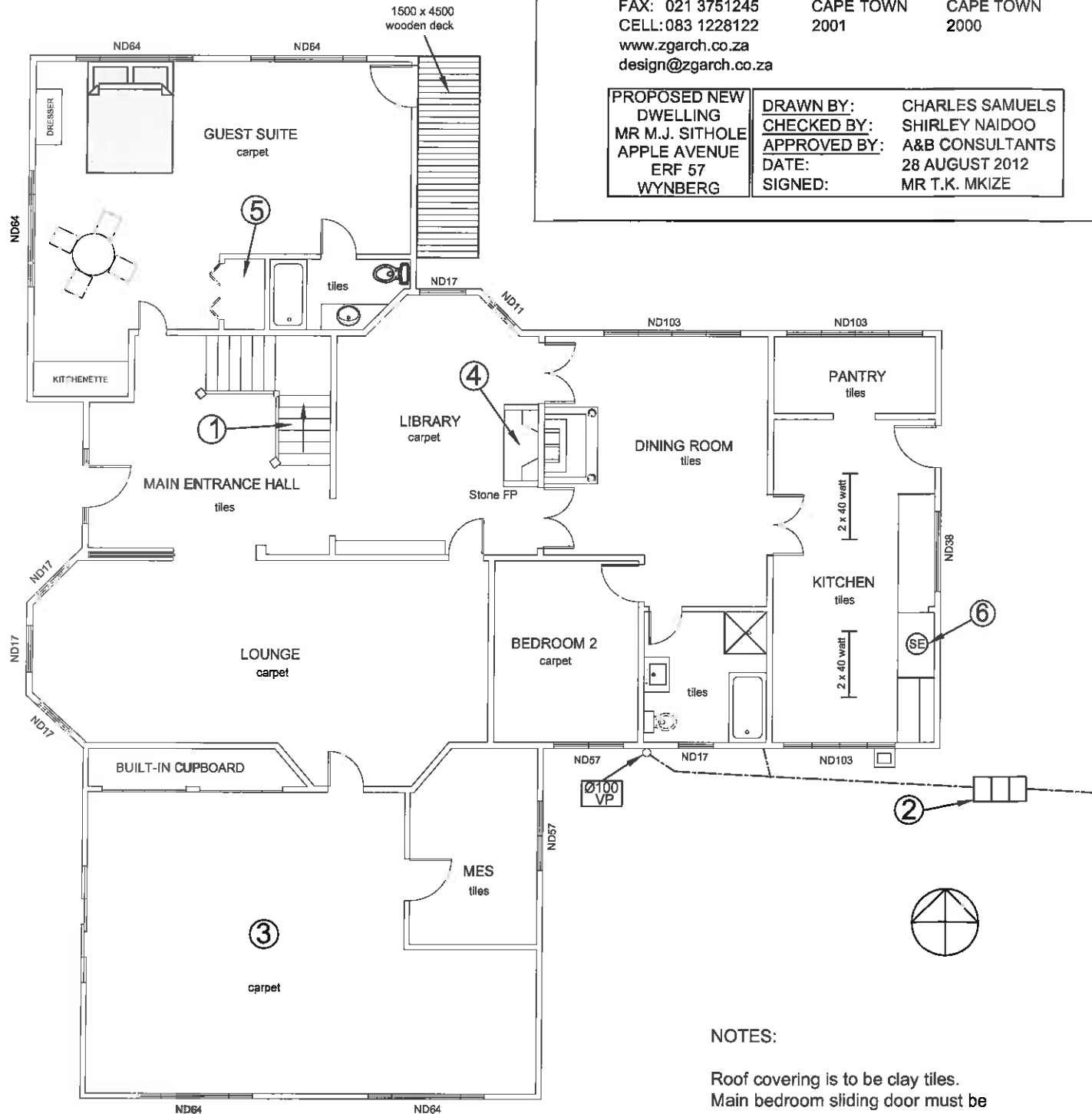
Z G Architects
"where the future is drawn"



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 CELL: 083 1228122 2001 2000
 www.zgarch.co.za
 design@zgarch.co.za

PROPOSED NEW DWELLING
 MR M.J. SITHOLE
 APPLE AVENUE
 ERF 57
 WYNBERG

DRAWN BY: CHARLES SAMUELS
 CHECKED BY: SHIRLEY NAIDOO
 APPROVED BY: A&B CONSULTANTS
 DATE: 28 AUGUST 2012
 SIGNED: MR T.K. MKIZE



NOTES:
 Roof covering is to be clay tiles.
 Main bedroom sliding door must be aluminium.
 Exterior walls to be face brick.
 Interior walls to be standard clay brick.

STUDY THE ADJACENT DRAWING AND ANSWER THE QUESTIONS THAT FOLLOW:

| | | |
|---|---|---|
| 1.1 What type of civil drawing is shown? | FLOOR PLAN | 1 |
| 1.2 How many bathrooms does this dwelling have? | 3 | 1 |
| 1.3 What is the diameter of the ventilation pipe? | 100 mm | 1 |
| 1.4 Who is the owner of the property ERF 57? | Mr M J SITHOLE | 1 |
| 1.5 In which city is the architect's office found? | CAPE TOWN | 1 |
| 1.6 In which elevation would you see the main entrance door? | WEST | 1 |
| 1.7 What is the feature at 1 called? | STEPS / STAIRS | 1 |
| 1.8 What is the feature at 2 called? | SEPTIC TANK | 1 |
| 1.9 What is the room designation indicated by the number 3? | MAIN/MASTER BEDROOM | 1 |
| 1.10 What does the abbreviation 'FP', as indicated at feature 4, stand for? | FIRE PLACE | 1 |
| 1.11 Suggest what the feature indicated by arrow 5 might be. | WALK-IN WARDROBE / CLOSET / DRESSING ROOM | 1 |
| 1.12 What is the feature at 6 called? | SMOKE EXTRACTOR | 1 |
| 1.13 How many ND17 windows are shown on this drawing? | 5 | 1 |
| 1.14 How many 40 watt fluorescent tubes are used in the kitchen? | 4 | 1 |
| 1.15 How many rooms have a tile floor finish? | 7 | 1 |
| 1.16 How many external doors are shown on this drawing? | 4 | 1 |
| 1.17 What type of brick must be used for the exterior walls? | FACE BRICK | 1 |
| 1.18 What is the area of the wooden deck in square metres? | 6.75 | 1 |

1.19 In the space below, draw, in NEAT freehand, the PLAN VIEW and ELEVATION VIEW of the SABS convention for a wall-mounted urinal.

| | | |
|-----------|----------------|---|
| PLAN VIEW | ELEVATION VIEW | 2 |
| | | |

20 MARKS

ANSWER SHEET 1



EXAMINATION NUMBER

| | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
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STUDY THE ADJACENT DRAWING AND ANSWER THE QUESTIONS THAT FOLLOW:

| | | |
|---|---|---|
| 1.1 What type of civil drawing is shown? | FLOOR PLAN | 1 |
| 1.2 How many bathrooms does this dwelling have? | 3 | 1 |
| 1.3 What is the diameter of the ventilation pipe? | 100 mm | 1 |
| 1.4 Who is the owner of the property ERF 57? | Mr M J SITHOLE | 1 |
| 1.5 In which city is the architect's office found? | CAPE TOWN | 1 |
| 1.6 In which elevation would you see the main entrance door? | WEST | 1 |
| 1.7 What is the feature at 1 called? | STEPS / STAIRS | 1 |
| 1.8 What is the feature at 2 called? | SEPTIC TANK | 1 |
| 1.9 What is the room designation indicated by the number 3? | MAIN/MASTER BEDROOM | 1 |
| 1.10 What does the abbreviation 'FP', as indicated at feature 4, stand for? | FIRE PLACE | 1 |
| 1.11 Suggest what the feature indicated by arrow 5 might be. | WALK-IN WARDROBE / CLOSET / DRESSING ROOM | 1 |
| 1.12 What is the feature at 6 called? | SMOKE EXTRACTOR | 1 |
| 1.13 How many ND17 windows are shown on this drawing? | 5 | 1 |
| 1.14 How many 40 watt fluorescent tubes are used in the kitchen? | 4 | 1 |
| 1.15 How many rooms have a tile floor finish? | 7 | 1 |
| 1.16 How many external doors are shown on this drawing? | 4 | 1 |
| 1.17 What type of brick must be used for the exterior walls? | FACE BRICK | 1 |
| 1.18 What is the area of the wooden deck in square metres? | 6.75 / 6.7 / 6.8 / 7 | 1 |

1.19 In the space below, draw, in NEAT freehand, the PLAN VIEW and ELEVATION VIEW of the SABS convention for a wall-mounted urinal.

| PLAN VIEW | ELEVATION VIEW |
|---|---|
|  |  |

2

QUESTION 2

INTERPENETRATION & DEVELOPMENT

The figure below shows the **INCOMPLETE** Front View and the **INCOMPLETE** Top View of a **CIRCULAR PIPE** penetrated by an **EQUILATERAL TRIANGULAR DUCT** drawn in First-angle Orthographic Projection. The auxiliary view of the triangular duct is also shown in the Top View.

Draw the following:

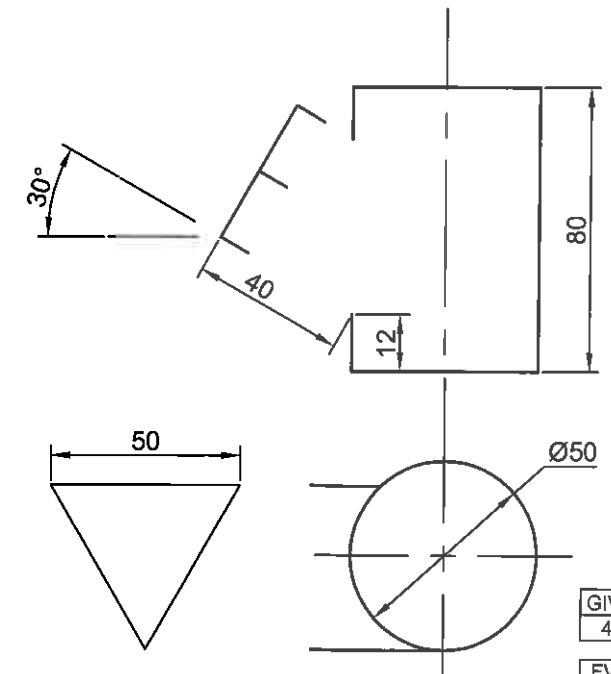
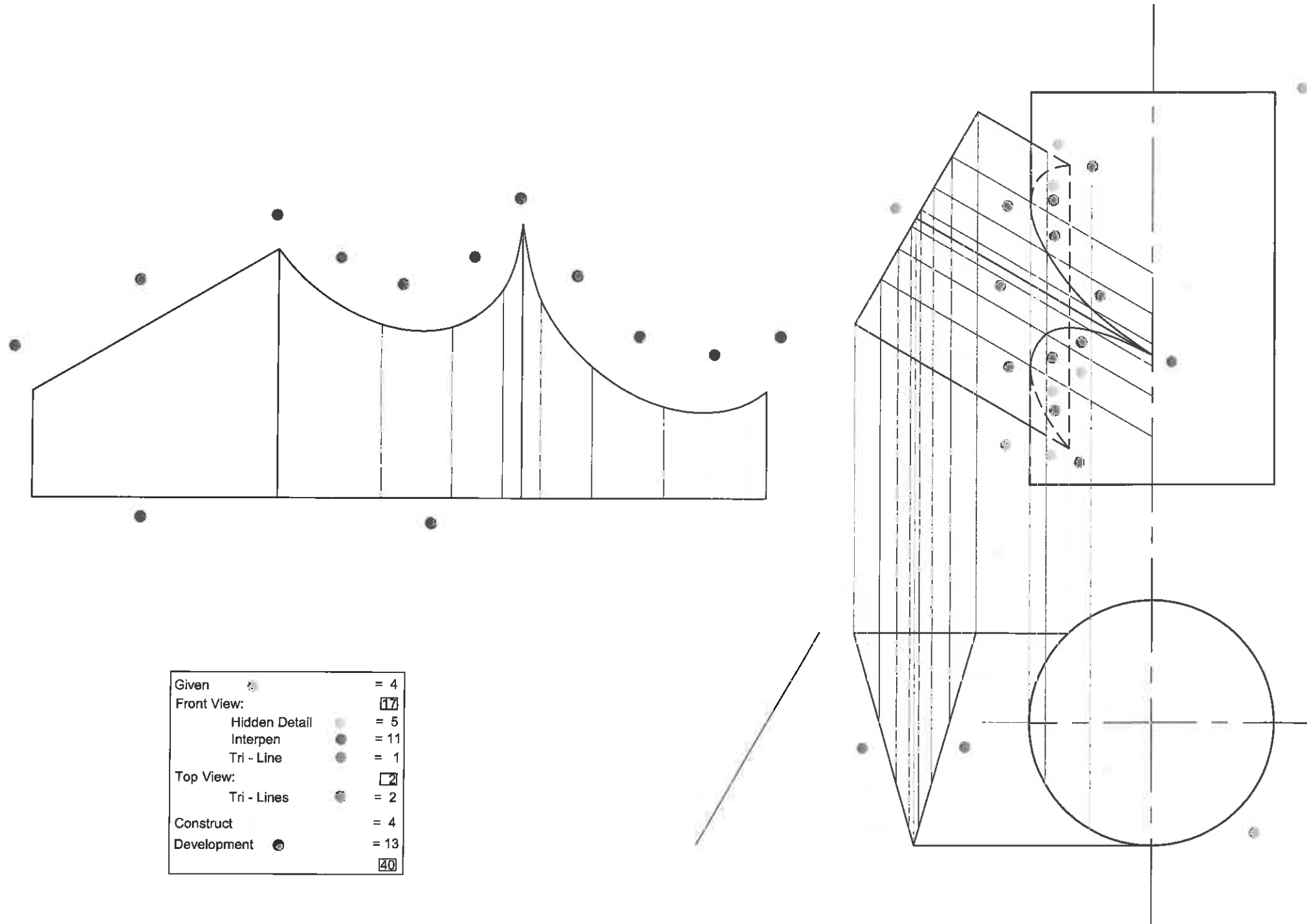
- 2.1 the complete **FRONT** view clearly showing the curve of interpenetration. Show all hidden detail.
- 2.2 the complete **TOP** view.
- 2.3 the development of the triangular duct.

Show all construction.

ASSESSMENT CRITERIA

You will be assessed on your ability to do the following:

- draw the given views 4
- complete the front view 17
- complete the top view 2
- show necessary construction 4
- develop and label the triangular duct 13



| | | |
|---------------|---|------|
| Given | • | = 4 |
| Front View: | | 17 |
| Hidden Detail | • | = 5 |
| Interpen | • | = 11 |
| Tri - Line | • | = 1 |
| Top View: | | 2 |
| Tri - Lines | • | = 2 |
| Construct | | = 4 |
| Development | • | = 13 |
| | | 40 |

| | |
|-----|----|
| GIV | 4 |
| FV | 17 |
| TV | 2 |
| CON | 4 |
| DEV | 13 |

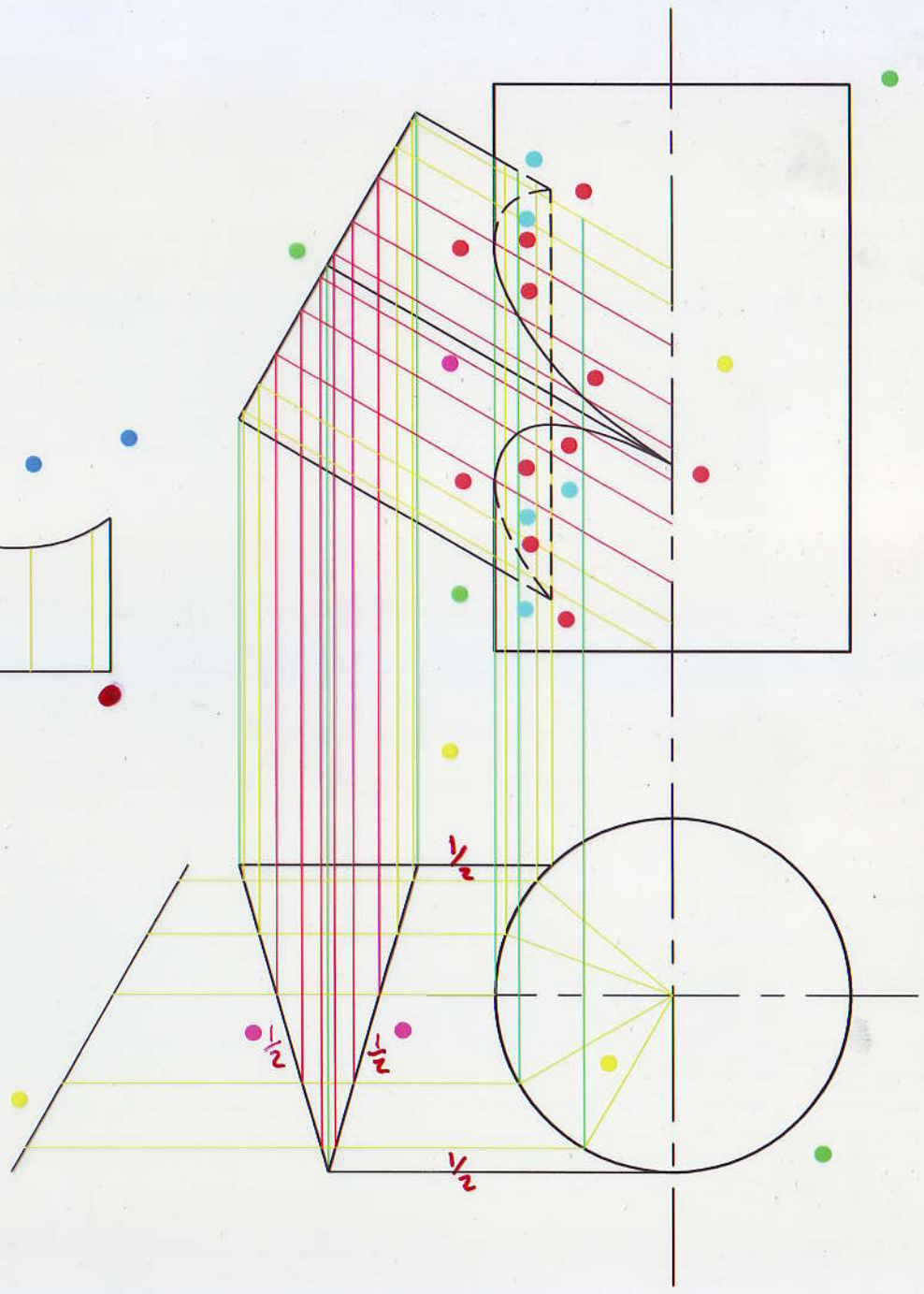
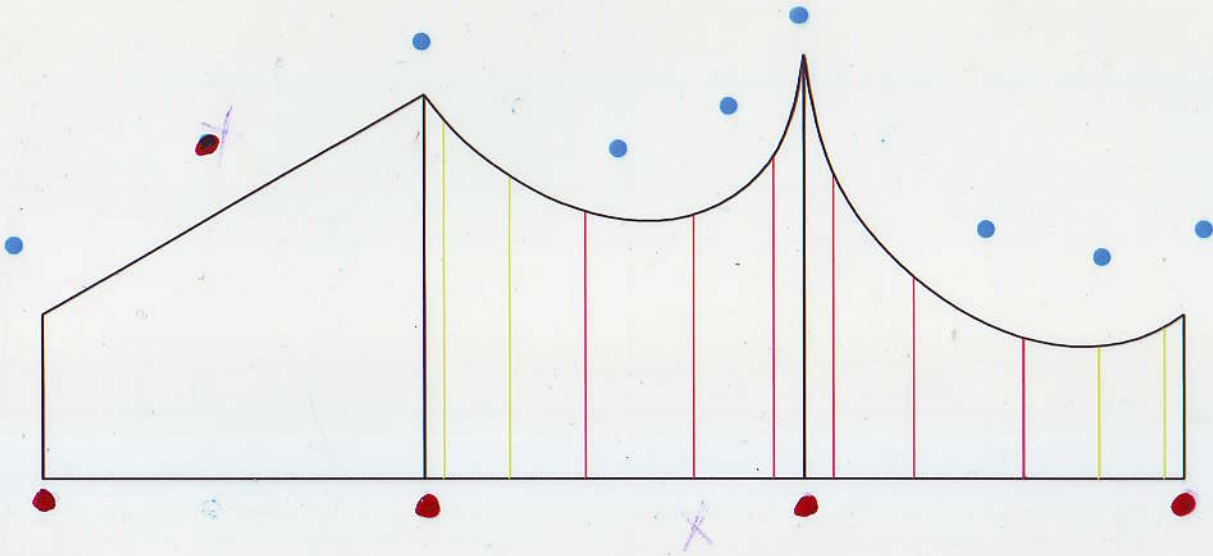
40 MARKS

EXAMINATION NUMBER

| | | | | | | | | | | | | | | | | | | | |
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ANSWER SHEET 2

Switched Hidden/Dark -3
 Wrong angle -3
 Δ not positioned correctly -3
 Size error -3



| | | |
|---------------|---|------|
| Given | ● | = 4 |
| Front View: | | 17 |
| Hidden Detail | ● | = 5 |
| Interpen | ● | = 11 |
| Tri - Line | ● | = 1 |
| Top View: | | 2 |
| Tri - Lines | ● | = 2 |
| Construct | ● | = 4 |
| Development | ● | = 13 |
| | | 40 |

QUESTION 3

TWO-POINT PERSPECTIVE

The figure shows the three views of an apartment. Draw a neat two-point perspective view of the dwelling.

PP - Picture Plane
 HL - Horizon Line
 GL - Ground Line
 SP - Station Point

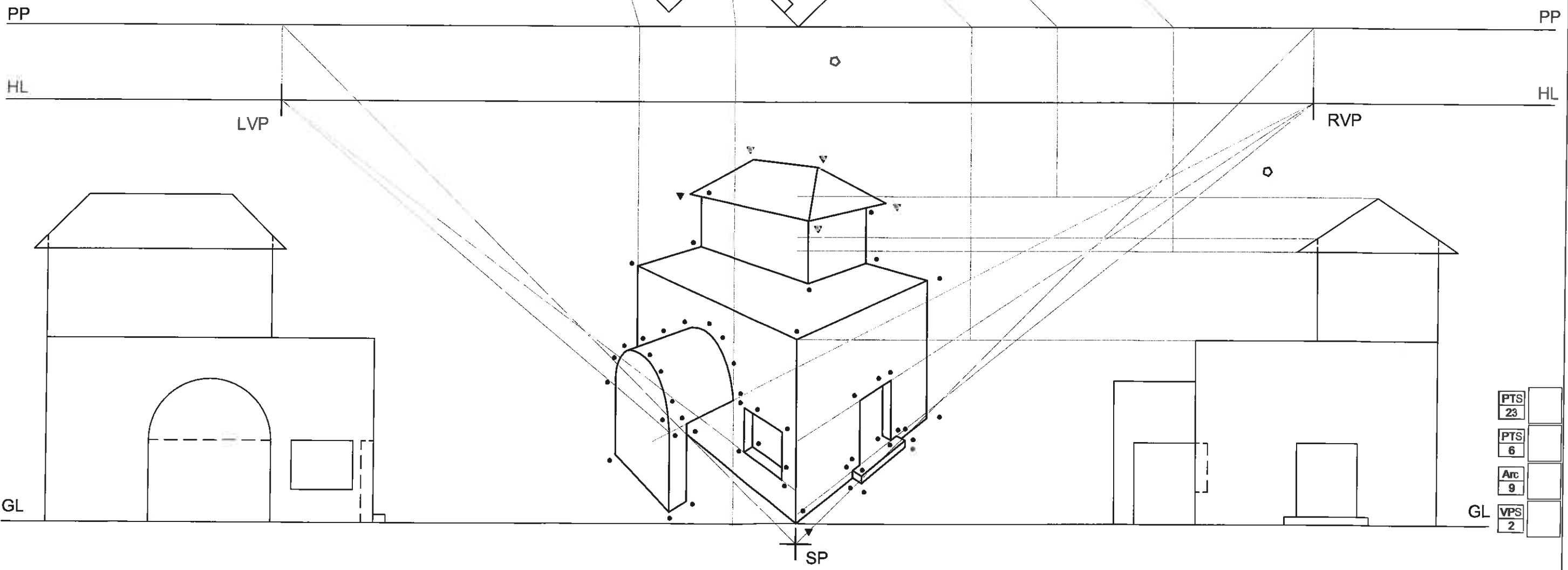
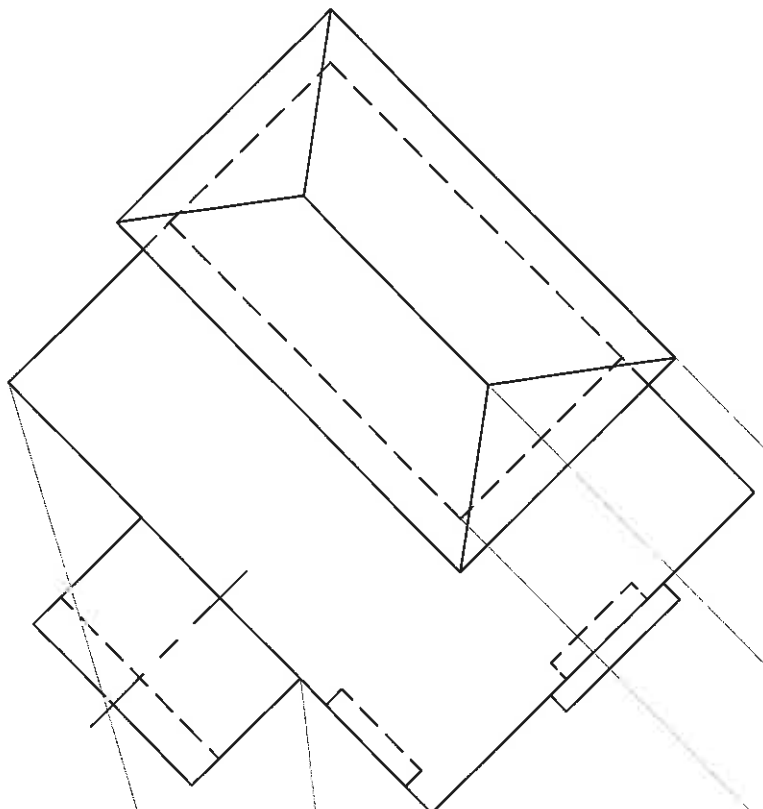
Show the wall thickness where applicable. Neatly label the vanishing points RVP and LVP. NO HIDDEN DETAIL IS REQUIRED.

ASSESSMENT CRITERIA

You will be assessed on your ability to do the following:

| | |
|--|----|
| • determine and label the vanishing points | 2 |
| • determine the two-point perspective view | 38 |

| | |
|-----------|------------|
| PTS | •42/2 = 21 |
| PTS | ▼ = 6 |
| CON | ◊ = 2 |
| Arc | • = 9 |
| VPS | • = 2 |
| 40 | |



| | |
|-----|----|
| PTS | 23 |
| PTS | 6 |
| Arc | 9 |
| VPS | 2 |

40 MARKS

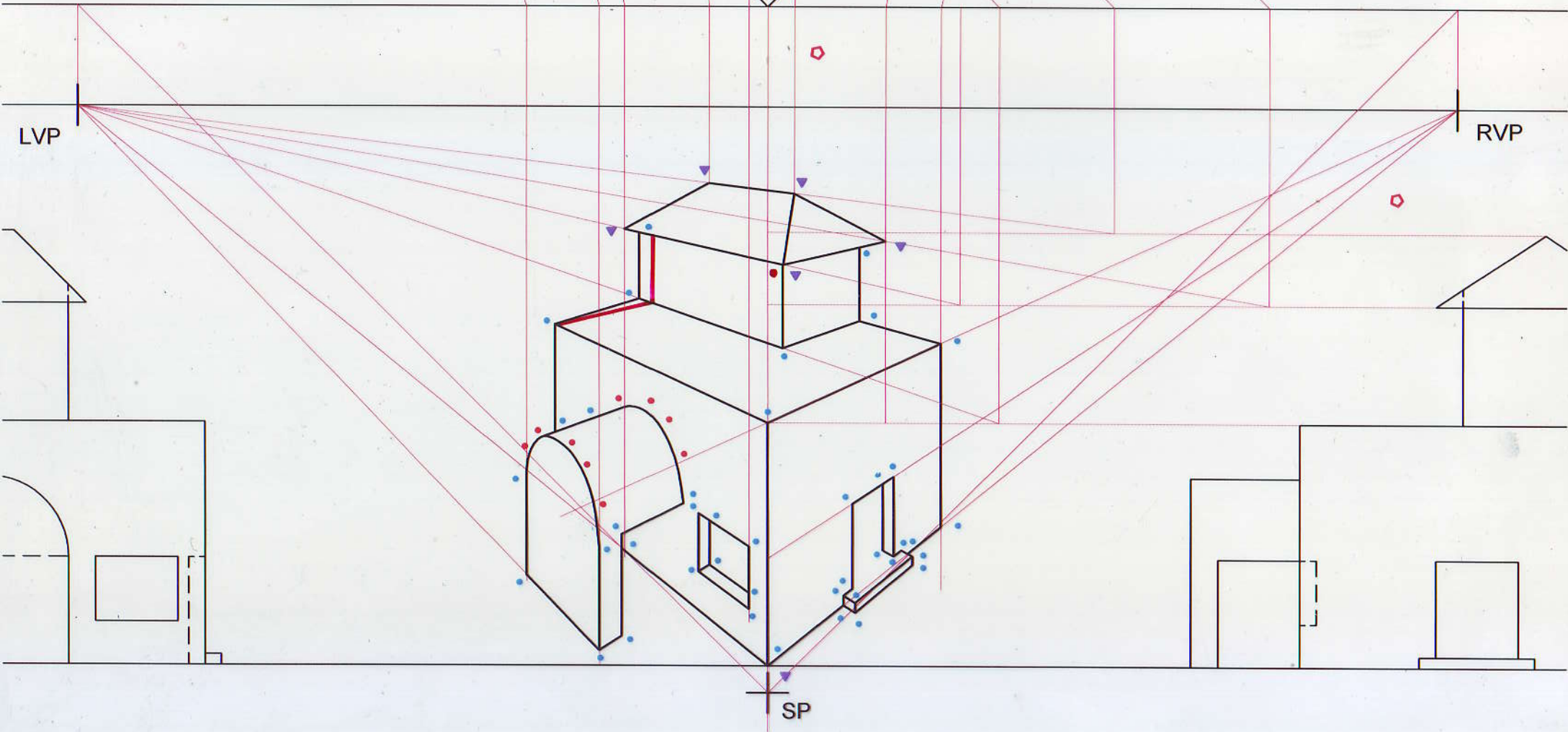
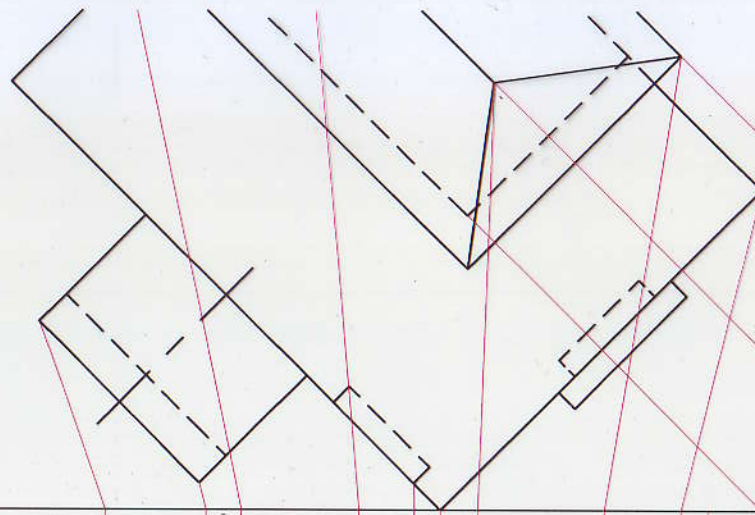
EXAMINATION NUMBER

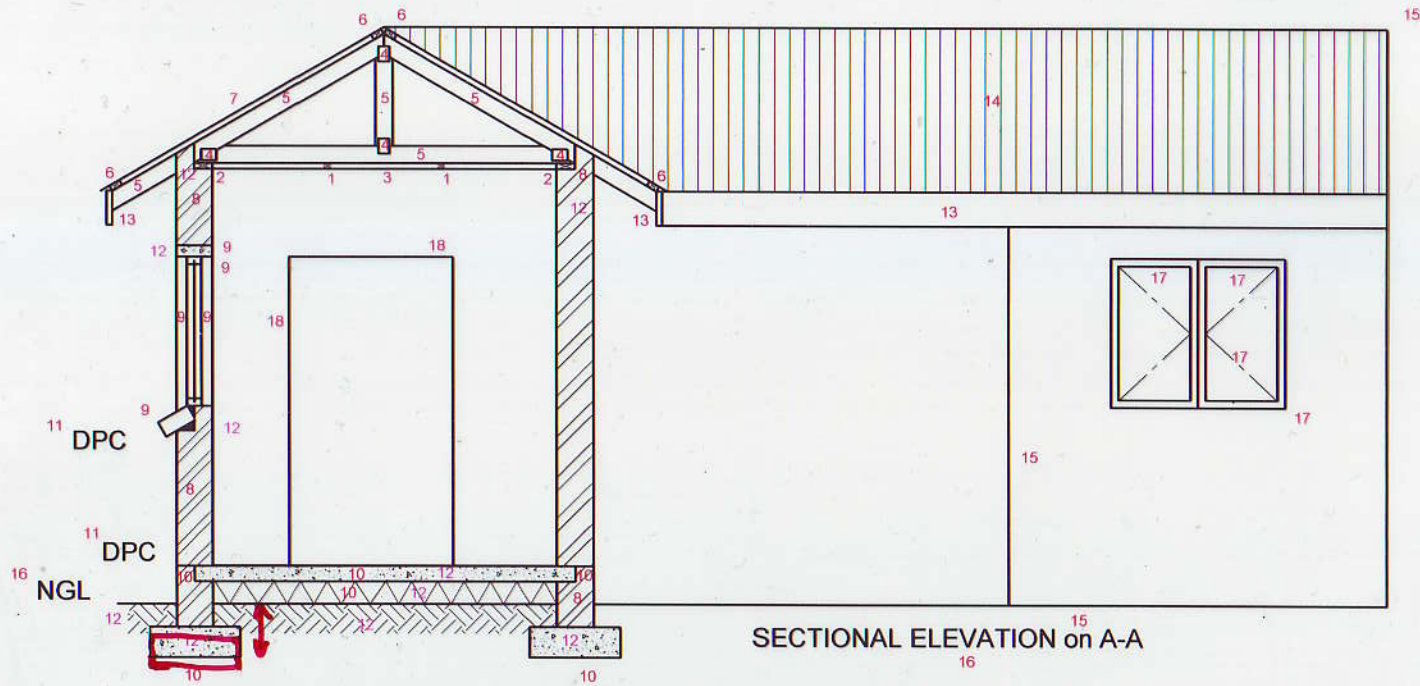
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|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

ANSWER SHEET 3

| | | |
|-----|---|-----------|
| PTS | • | 42/2 = 21 |
| PTS | ▼ | = 6 |
| CON | ◊ | = 2 |
| Arc | • | = 9 |
| VPS | • | = 2 |
| | | <u>40</u> |

*Incorrect VP - No VP mark
Movement - 2*





| | | | |
|----|------------------------|----|--|
| 1 | Ceiling Battens | 2 | |
| 2 | Wall Plates | 2 | |
| 3 | Ceiling Board | 1 | |
| 4 | Truss Plates | 4 | |
| 5 | Roof Truss | 5 | |
| 6 | Purlins | 4 | |
| 7 | Roof | 1 | |
| 8 | Walls | 4 | |
| 9 | Window | 5 | |
| 10 | Floor & Foundation | 6 | |
| 11 | DPC | 2 | |
| 12 | Hatching | 10 | |
| 13 | Facsia Board | 3 | |
| 14 | Roof Detail | 1 | |
| 15 | Walls - elevation | 3 | |
| 16 | Labels | 2 | |
| 17 | Outside window | 4 | |
| 18 | External Door Position | 2 | |

