

X226/301

NATIONAL
QUALIFICATIONS
2011

THURSDAY, 9 JUNE
1.00 PM – 3.00 PM

ARCHITECTURAL
TECHNOLOGY
HIGHER

100 marks are allocated to this paper.

Answer **all** questions in Section A (40 marks).

Answer **two** questions from Section B (30 marks each).

An Ordnance Survey Sitemap is provided for use with the following questions, 11(a), (b) and (c).

A worksheet is provided for Questions 12 and 13.



SECTION A

Attempt all the questions in this Section (total 40 marks)

1. State **two** *financial constraints* that would have to be considered before undertaking a building development project. 2
 2. A company has applied for a *Building Warrant* for a housing project. State how long the Warrant lasts and what action needs to be taken if the building is not completed before the Warrant expires. 2
 3. When surveying on a construction site briefly describe the main safety hazard when using the Staff. 2
 4. State **four** factors to be considered when selecting a suitable material for a roof covering. 4
 5. Briefly describe **two** aesthetic factors that will influence the design of a new building. 4
 6. During a linear survey a slope was taped and two measurements taken. The first reading taken was 22.509 m with a slope of 7° , whilst the second reading was 35.543 m and a slope of 5° . Calculate the horizontal length of the slope. 4
 7. Briefly describe, with the aid of an annotated sketch, the difference between the *True Origin* and the *False Origin* in relation to the National Grid. 4
 8. *Offsetting* and *Trilateration* are **two** techniques used in linear surveying. Briefly describe how **each** technique is used. 8
 9. List **six** items which should be contained in a contouring survey report for presentation to the client. 6
 10. Briefly describe **one** method of providing fire protection in a small domestic building. 4
- (40)**

[END OF SECTION A]

SECTION B

Attempt any **TWO** questions in this Section (total 60 marks)

- 11.** Refer to the scale 1:1250 Ordnance Survey Superplan Sheet NS5965SW and answer the following questions.
- (a) Describe **four** details on plan square NS593651. 4
 - (b) Identify the building that has the 10 m grid reference NS59326539. 2
 - (c) Determine the average gradient of George Square between North Frederick Street and South Frederick Street. 4
 - (d) Briefly describe **two** functions of the walls of a building. 4
 - (e) Briefly describe, with the aid of annotated sketches, **two** common forms of domestic wall construction currently in use in the UK. Include an explanation of the construction methods and materials used in each form. 8
 - (f) In the two forms of construction identified in Question 11(e) state **one** advantage and **one** disadvantage for **each** form of construction. 4
 - (g) Buildings are designed to carry loads from different sources. Identify and briefly describe **two** sources of these loads. 4
- (30)**
- 12.** (a) **Figures Q12 1** and **Q12 2** show a site plan and a floor plan for a proposed domestic building.
- (i) Briefly describe the site. 4
 - (ii) On **Worksheet Q12 1** draw a cross-section of the site which runs from east to west and crosses the highest point. 6
 - (iii) Explain where you might position the building giving reasons for your choice. 6
- (b) Before any building project begins it is important to assess the environmental impact that it will have. State **four** factors that should be considered in an environmental assessment of a proposed building project. 4
- (c) Briefly describe **two** methods to improve the μ values of a house that is being renovated. 4
- (d) Briefly describe **each** of the roles of the *Planning Department* and *Building Control Department* of the local authority. 6
- (30)**

[Turn over for Question 13 on Page four

13. (a) **Figure Q13** shows a set of levels taken during a survey of a construction site.
Using **Table Q13**:
- (i) book the levels; 5
 - (ii) reduce the levels using an appropriate method; 5
 - (iii) carry out an appropriate arithmetic check on the reduction; 2
 - (iv) state the magnitude of the closing error in the survey and suggest a reason for this error. 2
- (b) Briefly describe **two** important properties of **each** of the following materials used in the construction of domestic buildings.
- (i) Facing bricks.
 - (ii) Expanded polystyrene. 4
- (c) **Worksheet Q13(c)** shows the incomplete detail drawing for the foundation and substructure of a domestic building. On the worksheet:
- (i) identify items A and B;
 - (ii) sketch the DPC, ventilation and thermal insulation requirements. 6
- (d) Identify and briefly explain **three** ways a building development can comply with guidelines on sustainability. 6
- (30)**

[END OF SECTION B]

[END OF QUESTION PAPER]

FOR OFFICIAL USE

--	--	--	--	--	--

Mark

--

X226/302

NATIONAL
QUALIFICATIONS
2011

THURSDAY, 9 JUNE
1.00 PM – 3.00 PM

ARCHITECTURAL
TECHNOLOGY
HIGHER

Worksheets for Questions 12 and 13

Fill in these boxes and read what is printed below.

Full name of centre

--

Town

--

Forename(s)

--

Surname

--

Date of birth

Day Month Year

--	--	--	--	--	--

Scottish candidate number

--	--	--	--	--	--	--	--	--	--

Number of seat

--

To be inserted inside the front cover of the candidate's answer book and returned with it.



WORKSHEET Q12 1

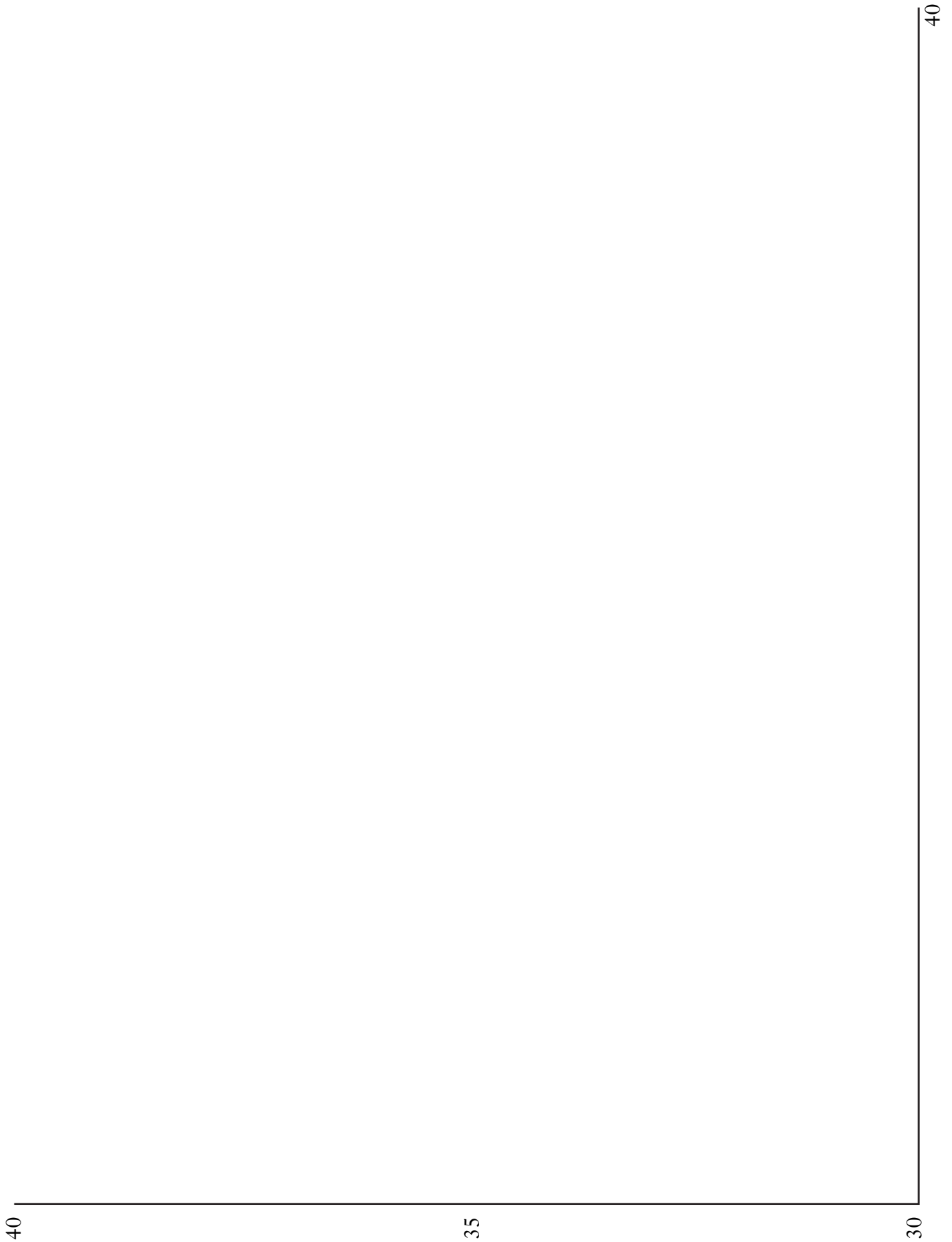


FIGURE Q12 1

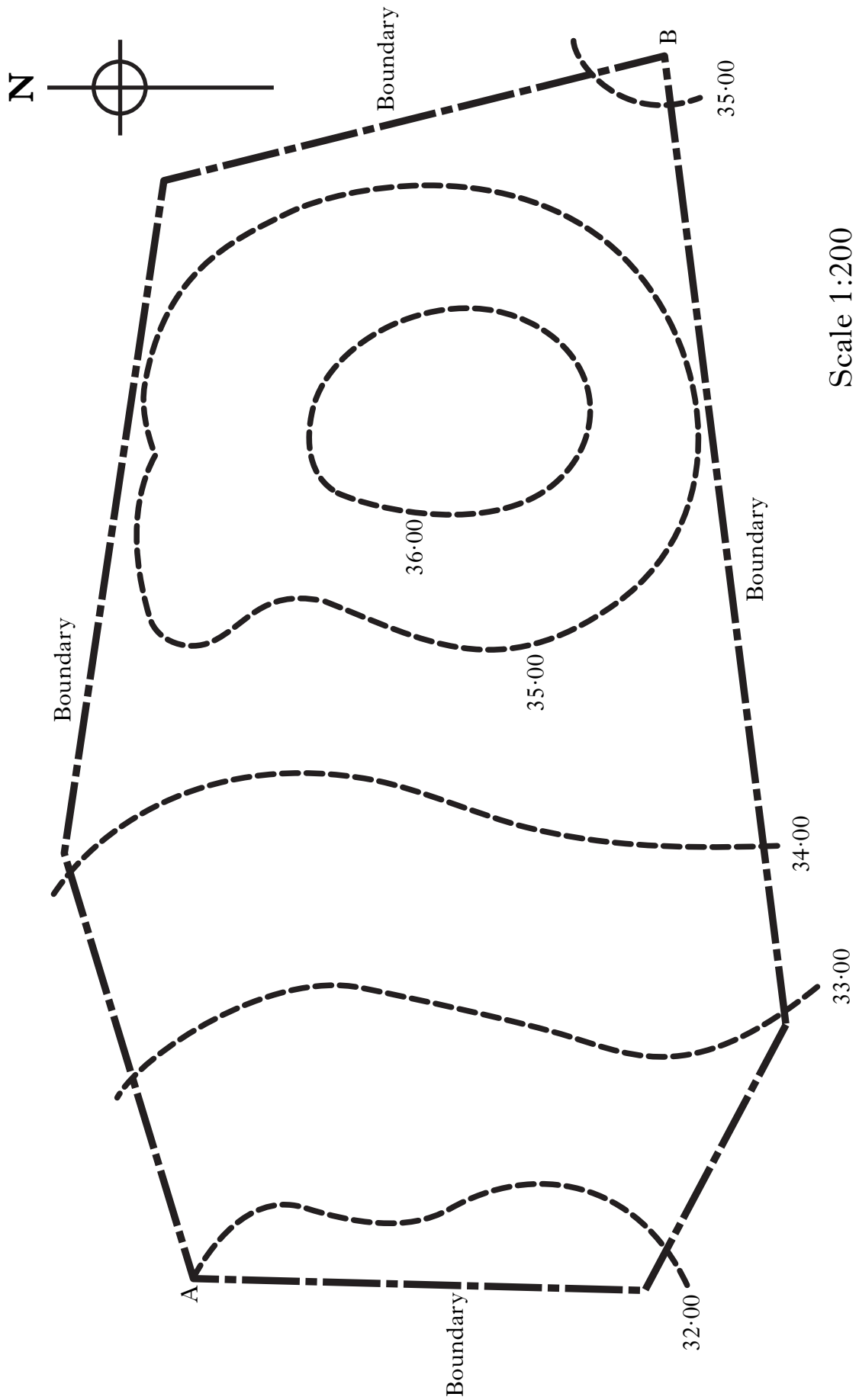
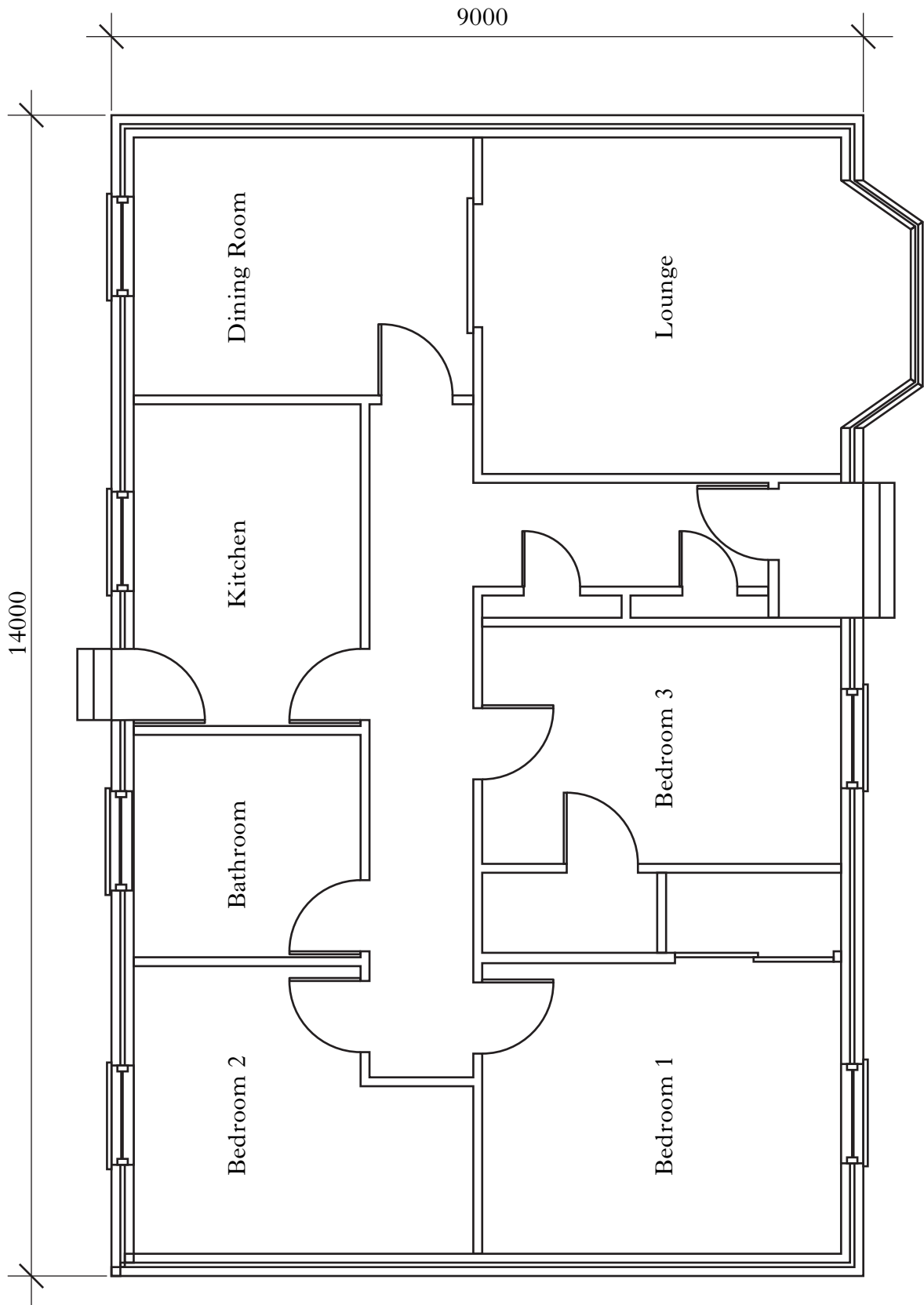


FIGURE Q12 2



WORKSHEET Q13(a)

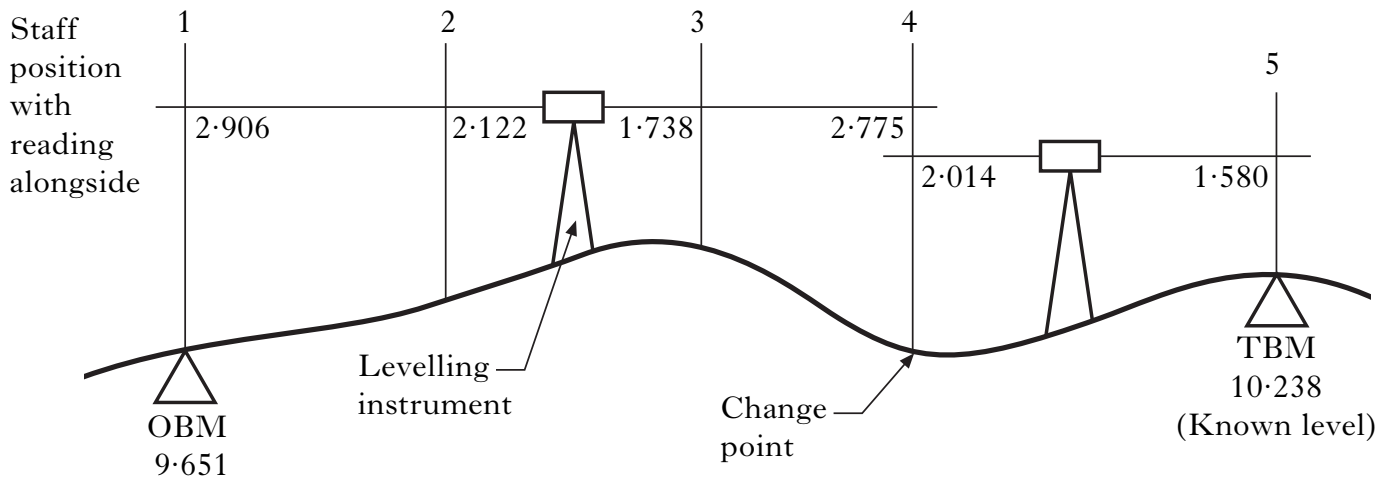


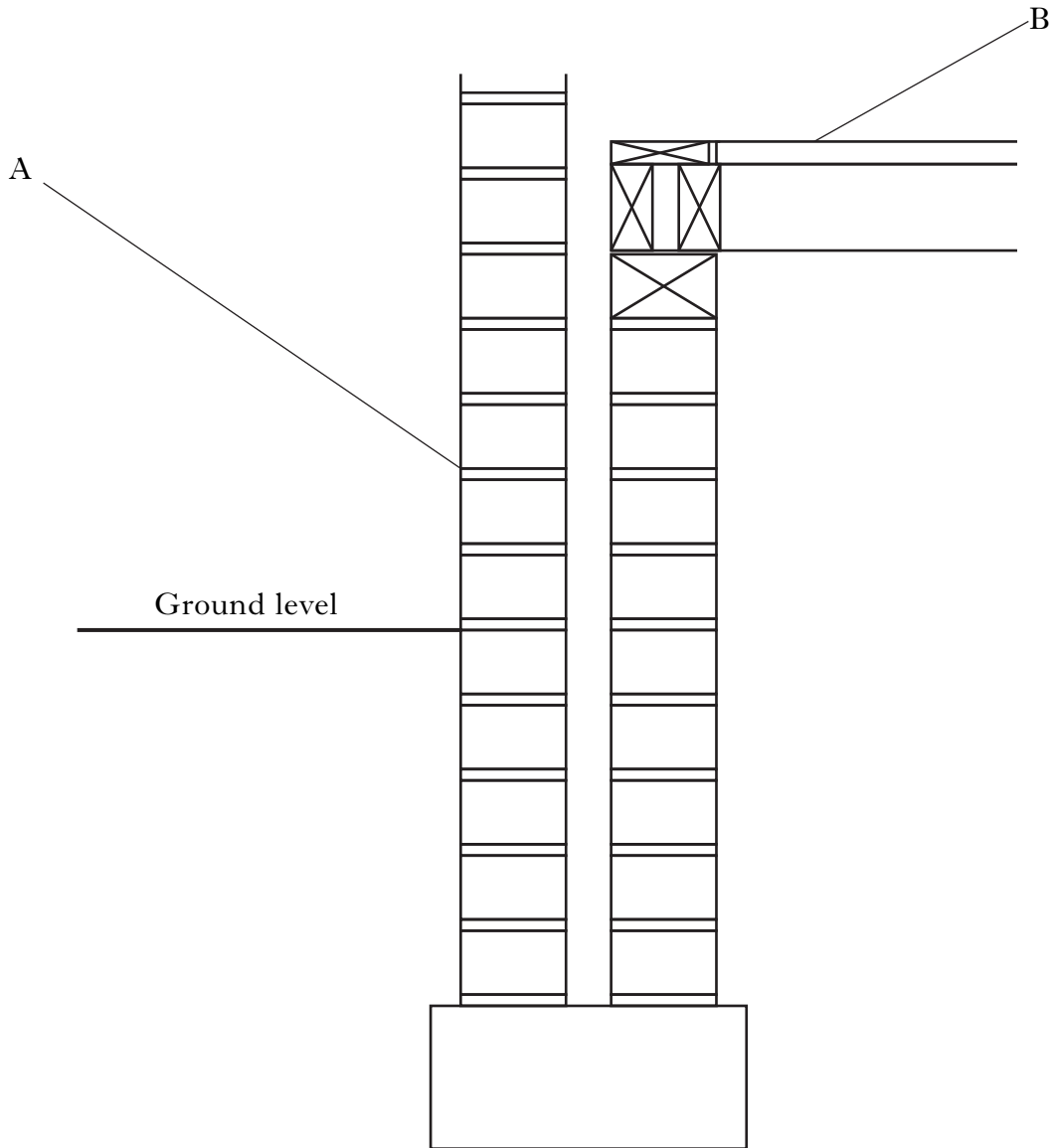
Figure Q13

Back Sight	Intermediate Sight	Fore Sight	Ht of Collimation Or Rise & Fall	Reduced Level	Remarks
					OBM
					TBM

Table Q13

[Turn over

WORKSHEET Q13(c)



NOT TO SCALE

[END OF WORKSHEET]

[BLANK PAGE]

[BLANK PAGE]