X226/12/01

NATIONAL QUALIFICATIONS 2013

THURSDAY, 6 JUNE
9.00 AM – 11.00 AM

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 Question 12(*b*).

A worksheet is provided for Question 13(*a*).

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SECTION A

Marks

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

1. State **four** *functional* requirements of a small domestic building. **4**

2. State **four** items that should be noted during a walkover survey prior to carrying out a survey of a site in an urban area. **4**

3. Briefly describe **two** ways in which the *comfort* of the occupants of a building can be improved. **4**

4. During a *levelling survey* using a 10m grid, two adjacent points on the grid were found to have spot levels of 10·157m and 9·352m. Determine the positions of a 9·5m and 10m contour. **4**

5. Briefly describe **two** factors in the design of a domestic kitchen that will be influenced by the size of the average person. **4**

6. Briefly describe, with the aid of an annotated sketch, how the horizontal distance of a slope can be determined during a *linear survey*. **4**

7. Briefly explain **two** methods that may be used to improve the *Design Life* of a building. **4**

8. Briefly describe how the person holding the staff can ensure that the readings taken during a *levelling survey* will be as accurate as possible. **4**

9. Briefly describe **two** common causes of structural instability. **4**

10. One form of *Legal Constraint* in a building project is a *contract*. Briefly describe **two** legal constraints that may form part of a building contract. **4**

(40)

[*END OF SECTION A*]

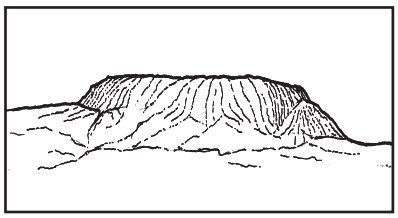
SECTION B

Marks

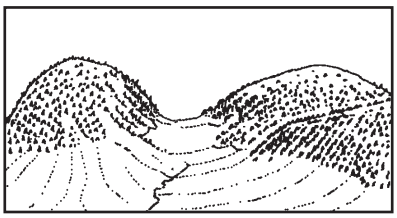
Attempt any TWO questions in this Section (total 60 marks)

11. (*a*) Briefly describe how the pillbox bubble can be centred after the level has been positioned securely on its tripod. **6**

(*b*) Shown below are three sketches of different land terrain. Show by means of sketches how the contours for these terrains would be represented.



(i) Large flat topped hill



(ii) Gap between two hills

(iii) Ridge with steep slopes at either side **6**

(*c*) State **two** advantages and **two** disadvantages of *timber frame* over *traditional* construction. **4**

(*d*) Briefly describe **two** ways in which the reading obtained from **each** of the following types of measuring tape can be inaccurate.

(i) Steel

(ii) Synthetic **4**

(*e*) Briefly describe **two** *aesthetic* factors that can influence the design of a building project. **8**

(*f*) State **two** factors that will control the width of a foundation. **2**

(30)

[Turn over

12. (*a*) Briefly explain **three** specific design *factors* that would have to be considered when designing **semi-detached** dwelling houses. *Marks* **6**

(*b*) Refer to the 1:1250 Ordnance Survey scale map and answer the following questions.

(i) Identify the item that is contained in the map at grid reference 256890, 666340. **2**

(ii) Identify items 1–4 marked on the map. **4**

(iii) Determine the average gradient of Sauchiehall Street between Radnor Street and Gray Street. **4**

(iv) Using the scale located at the bottom of the map, determine the area of the bowling green marked as item X on the map. **2**

(*c*) After completion of a survey using a 30m steel tape, the surveyor found that on checking the accuracy of the tape its actual length was 30·19m. Determine the true length of a line that was measured in the survey as 272·88m. **4**

(*d*) Prepare an annotated sketch, to show the detail of a suspended timber ground floor construction for a timber frame domestic dwelling, at its junction with the external wall. **8**

(30)

13. (*a*) **Figure Q13(*a*)** shows a set of levels taken during a survey of a construction site.

Using **Worksheet Q13(*a*)**

(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**

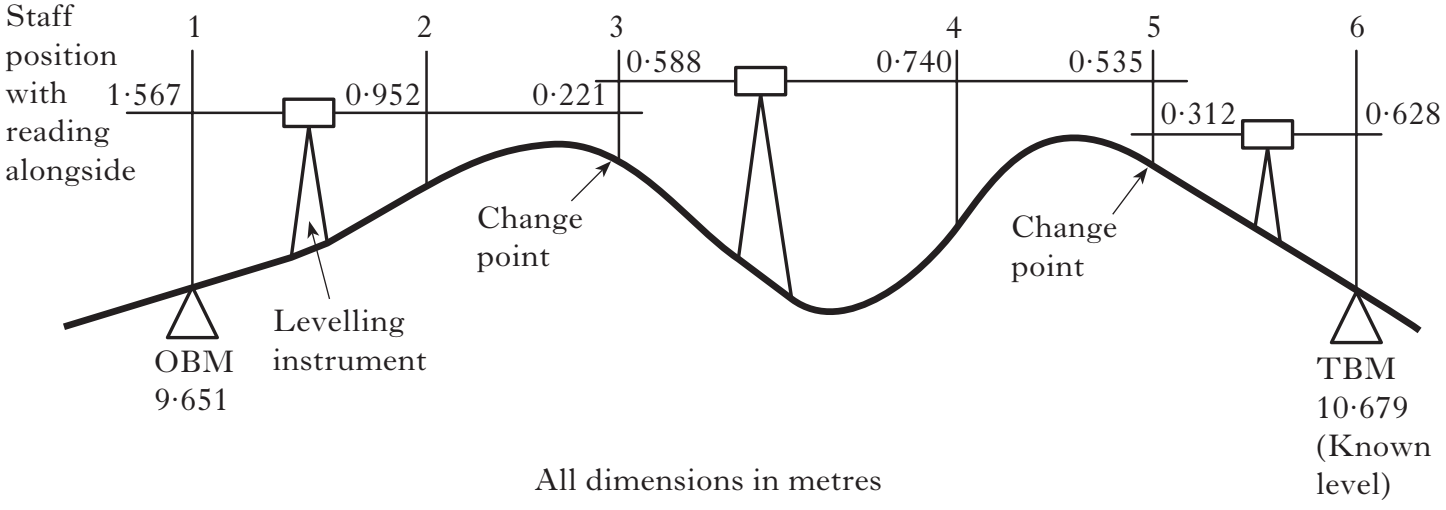


Figure Q13(*a*)

13. (continued)

(*b*) Briefly describe how the interior of a single storey domestic building would be designed to accommodate a **wheel chair** user. **4**

(*c*) State the name given to each type of foundation shown at **Figure Q13(*c*) (i)** and **(ii)** below, and briefly describe **one** situation where **each** may be used. **4**

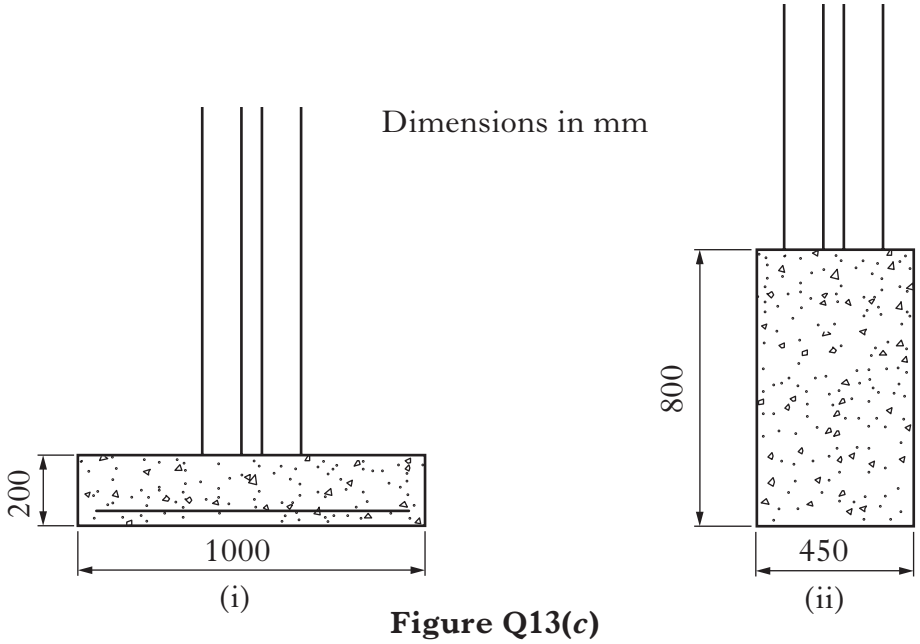


Figure Q13(*c*)

(*d*) State **two** approvals by the *local authority* which must be gained prior to commencing on a building project. **2**

(*e*) Identify **three** ways in which *noise pollution* can affect the occupants of a domestic building and briefly describe how each can be minimised. **6**

(30)

[*END OF SECTION B*]

[*END OF QUESTION PAPER*]

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FOR OFFICIAL USE

Mark

X226/12/11

NATIONAL QUALIFICATIONS 2013

THURSDAY, 6 JUNE 9.00 AM – 11.00 AM

ARCHITECTURAL TECHNOLOGY
HIGHER
Worksheet for Question 13(*a*)

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.

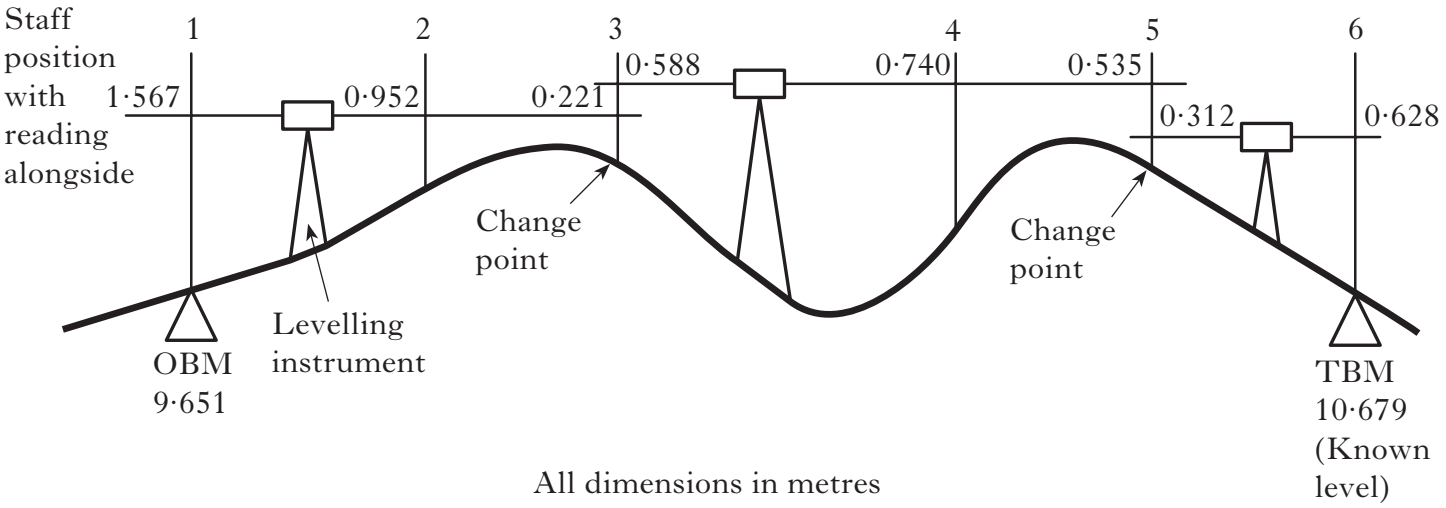

Figure Q13 (a)

WORKSHEET Q13(*a*)

BS	Int	Fore		Reduced Level	Remarks

[*END OF WORKSHEET*]