

# X226/12/01

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NATIONAL  
QUALIFICATIONS 2012

WEDNESDAY, 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 Questions 13(a), (b) and (c).

A worksheet is provided for Questions 11(d) and 12(b).



## SECTION A

Marks

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

1. State **two** *functions* of the ground floor of a domestic building. 2
2. A straight road is shown on a map to have two spot heights of 11·2 m and 13·5 m. The scale of the map is 1:1250 and the spot heights are measured at 2·7 cm apart. Determine the gradient of the road. 4
3. Briefly describe **two** ways in which *quality assurance* is maintained in house building. 4
4. Briefly describe **two** *financial constraints* that will influence the design of a domestic building project. 4
5. State a suitable scale for a site layout plan and **two** items of information that may be included on this plan. 4
6. Briefly describe, with the aid of an annotated sketch, the purpose of a *check line* when carrying out a linear survey. 4
7. Briefly explain what is meant by the term *Whole Life Costs* in relation to a building project. 4
8. Briefly describe, with the aid of an annotated sketch, what is meant by the *Central Meridian* in relation to the *National Grid*. 4
9. Many different materials are used in the construction industry.
  - (i) Identify **one** material for which the *strength to weight ratio* is an important property and briefly describe where it may be used in a building. 3
  - (ii) Identify **one** material for which *fire resistance* is an important property and briefly describe where it may be used in a building. 3
10. Briefly describe the difference between a *permanent* and a *temporary* benchmark created during a survey. 4

**(40)**

[END OF SECTION A]

**SECTION B**

*Marks*

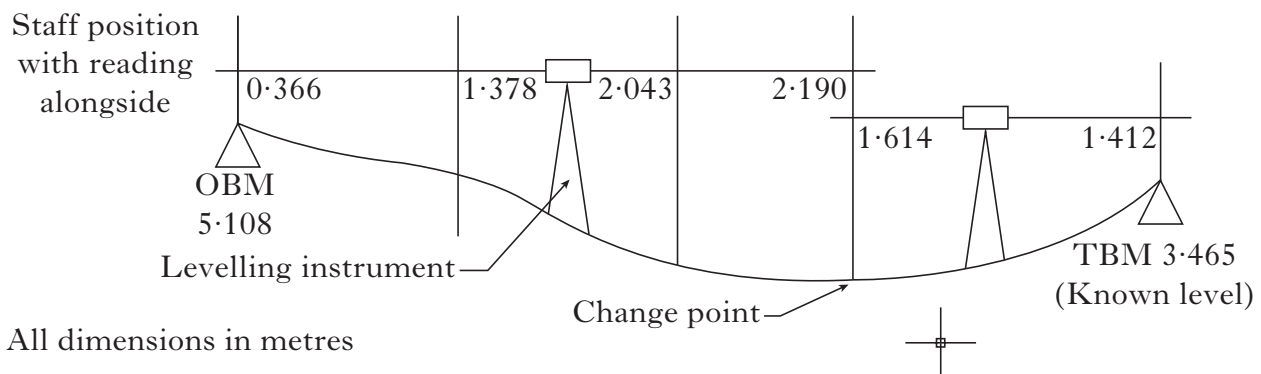
**Attempt any TWO questions in this Section (total 60 marks)**

- 11.** (a) State the **two** types of local *Planning Permission* and briefly explain the differences between them. 4
- (b) Briefly describe **two** methods of how *thermal efficiency* can be maintained in domestic buildings. 4
- (c) Briefly describe, with the aid of annotated sketches, how you would survey a *curved boundary* during a linear survey. 6
- (d) **Worksheet Q11(d)** shows a map reference; determine the map references for grid squares **A, B, C** and **D**. 8
- (e) Briefly describe **four** factors that would have to be considered when planning a new building beside older existing buildings in a city centre. 8
- (30)**

- 12.** (a) Briefly compare **three functional requirements** of the entrance to a High Street bank and those of the entrance to a detached bungalow. 6
- (b) **Figure Q12(b)** shows a set of levels taken during a survey of a construction site.

Using **Worksheet Q12(b)**

- (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 Q12(b)**

**[Turn over for Questions 12(c) and (d) and Question 13 on Page four**

## 12. (continued)

- (c) Domestic buildings are subject to live, dead and superimposed loads.
- (i) Briefly describe, with the aid of an annotated sketch, how these loads are transmitted through the building. 6
- (ii) Briefly describe how structural stability is achieved at the junction of the roof and wall. 2
- (d) Briefly describe **one** *demographic trend* that could influence the design of a building development. 2
- (30)**

## 13. Refer to the 1:1250 Ordnance Survey scale map and answer the following questions.

- (a) Identify the item that is contained in the map at the grid reference 3035985898. 2
- (b) Identify the grid square 30378589 and identify **six** items of detail within its plan square. 6
- (c) Determine the average gradient of Gordon Street between points **A** and **B**. 4
- (d) After a linear survey it was suspected that a 50 m tape was non-standard. When checked against a known baseline of 202.600 m the distance read using the tape was 202.537 m. Has the tape stretched or shrunk and by how much from its standard length? 4
- (e) Briefly explain the *function* of a **ventilation brick** and identify where it should be located in the brickwork of an external wall. 2
- (f) Prepare an annotated sketch to show the *Ridge Detail* requirements for a typical domestic dwelling. 8
- (g) Briefly describe **two** advantageous properties of plastics and state **two** of their uses in house building. 4
- (30)**

[END OF SECTION B]

[END OF QUESTION PAPER]

FOR OFFICIAL USE

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**X226/12/11**

NATIONAL  
QUALIFICATIONS  
2012

WEDNESDAY, 6 JUNE  
9.00 AM – 11.00 AM

ARCHITECTURAL  
TECHNOLOGY  
HIGHER

Worksheets for Questions 11(d)  
and 12(b)

**Fill in these boxes and read what is printed below.**

Full name of centre

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Town

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Date of birth

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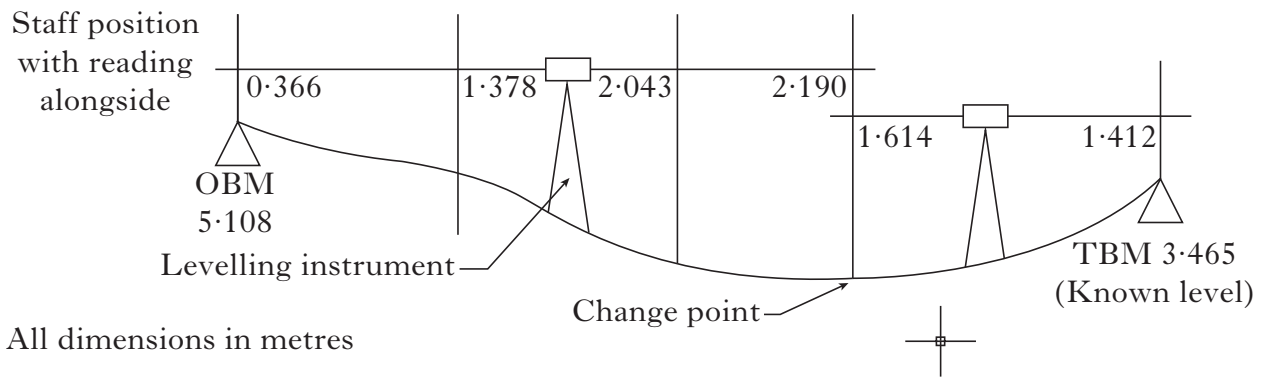
To be inserted inside the front cover of the candidate's answer book and returned with it.



**WORKSHEET Q11(d)**

|          |                 |          |
|----------|-----------------|----------|
|          | <b>B</b>        |          |
| <b>A</b> | <b>SJ3748SW</b> | <b>D</b> |
|          | <b>C</b>        |          |

|          | <b>MAP REFERENCE</b> |
|----------|----------------------|
| <b>A</b> |                      |
| <b>B</b> |                      |
| <b>C</b> |                      |
| <b>D</b> |                      |



**Figure Q12(b)**

**WORKSHEET Q12(b)**

| BS | Int | Fore |  | Reduced Level | Remarks |
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