

X226/301

NATIONAL
QUALIFICATIONS
2008

MONDAY, 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 Superplan map is provided for use with the following questions, 10(a), (b), (c), and 12(a), (b), (c).

Worksheets are provided for Questions 11(a) and (b).



SECTION A

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

1. State the name of the statutory document which serves to ensure that construction proposals in Scotland meet minimum acceptable standards. 2
2. Briefly explain **two** principal differences between the work of a Local Authority's Planning Department and Building Control Department. 4
3. Briefly describe the ground data which is generally collected when carrying out a linear survey. 4
4. (a) A survey line, AB, has been step taped with step lengths of 12.76, 9.82, 10.85 and 7.32 m. Calculate the horizontal plan length. 2
(b) If the vertical difference between A and B is 6.918 m, determine the average gradient between A and B. 4
5. A 30m tape, suspected of being non-standard, was checked against a baseline which was known to be 206.310m long. The distance obtained using the tape was found to be 206.090 m. By how much has the tape been stretched or shrunk from its standard length? 4
6. (a) Briefly describe the most common type of level used in the construction industry today. 2
(b) Briefly describe which adjustments need to be carried out before reading the levelling staff. 2
(c) State the **two** main methods of *level reduction*. 2
7. Briefly describe the **two** main *construction methods* used in domestic buildings. 4
8. List **four** items of information the designer will require from the client, prior to commencing work on the design. 4

Marks

9. Prepare an annotated sketch to show a typical edge detail for a simple edge beam and slab raft which is to support a house of traditional construction.

Show:

1. the means of supporting the external walls;
2. the solum treatment.

6

(40)

[END OF SECTION A]

[Turn over

SECTION B

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

- 10.** Refer to the 1:1250 scale Ordnance Survey Superplan sheet and answer the following questions.
- (a) The National Grid sheet reference of this Superplan is NO4030SW. State the National Grid sheet references for the **four** adjacent sheets. **8**
 - (b) Name the building that has the 10 m grid reference 40253047. **2**
 - (c) Briefly describe the detail in plan square 403300. **4**
 - (d) Briefly explain what is meant by the term *Building Design*. **4**
 - (e) State **six** *functional requirements* of buildings on a proposed private housing development. **6**
 - (f) Briefly explain how an application for Planning Approval is made. **6**
- (30)**

11. Worksheet Q11(a) shows the booking details for a set of levels taken during an indirect contour survey of a small construction site.

Worksheet Q11(b) shows a plan of the site and the levelling grid used during the survey.

- (a) On **Worksheet Q11(a)** reduce the levels using the Height of Collimation method and perform an arithmetic check on your results. **8**
- (b) On **Worksheet Q11(b)**, mark the spot levels on the levelling grid and plot the positions of the 30 m and 31 m contour lines. **8**
- (c) A *constraint* is a restrictive condition or obligation placed on building development.
Briefly describe **three** *social constraints* which can affect a proposed housing development. **6**
- (d) Briefly describe **two** important properties of **each** of the following materials used for the superstructures of domestic buildings:
- (i) structural timber; **4**
 - (ii) masonry products. **4**
- (30)**

[Turn over for Question 12 on Page six]

- 12.** Refer to the 1:1250 scale Ordnance Survey Superplan Sheet and answer the following questions.
- (a) Identify and state the meaning of **four** conventional symbols and notations shown in the plan square 403302. **4**
 - (b) State the 1 m grid reference of the Robert Burns Statue in front of the Albert Institute Museum and Art Gallery. **2**
 - (c) Determine the average gradient in Constitution Road in plan square 400304. **4**
 - (d) Briefly explain the advantages to the construction industry of Ordnance Survey Superplan Data and map reproductions. **4**
 - (e) (i) Prepare an annotated sketch to show the structural and enclosure elements of a two-storey domestic building. **8**
 - (ii) State **two** performance requirements for each of the following and briefly describe how these are met:
 - 1. structural elements; **4**
 - 2. enclosure elements. **4**
- (30)**

[END OF SECTION B]

[END OF QUESTION PAPER]

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