X227/301

NATIONAL QUALIFICATIONS 2009

WEDNESDAY, 10 JUNE
1.00 PM – 3.00 PM

BUILDING CONSTRUCTION HIGHER

100 marks are allocated to this paper.

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

Attempt any **two** questions in Section B (30 marks each).

Worksheets are provided for Questions 1(*a*), 1(*b*), 3 and 9(*e*). Hand these in with your answer book.

SECTION A

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

Marks

1. (*a*) **Worksheet Q1(*a*)** shows three types of brickwork bonding.

Using the **Worksheet**, name the **three** types of bond. **3**

(*b*) **Worksheet Q1(*b*)** shows a typical modular brick.

On the **Worksheet**, name the three parts of the brick and list all three dimensions. **3**

2. Prepare an annotated sketch to show a horizontal cross-section through a window jamb in a traditional masonry cavity wall.

Include all wall finishes. **5**

3. **Worksheet Q3** shows a typical joist opening in a suspended timber ground floor.

On the **Worksheet** name each joist. **4**

4. Prepare a sketch to show each of the following types of cavity wall tie:

- double triangle wire tie
- vertical twist thick plate type
- butterfly wire tie. **3**

5. Sketch a typical verge detail for a projecting roof to show the following components:

- end rafter
- outrigger
- internal and external blockwork
- ladder rafter
- barge board
- soffit plate. **6**

6. (*a*) Name **two** functions of a building site perimeter fence. **2**

(*b*) Describe, with the aid of an annotated sketch, a common method of forming a temporary access to a construction site where the bearing capacity of the soil is poor. **4**

7. Briefly describe the following ground investigation methods:

- trial pits
- bore holes. **6**

8. Identify **four** items of temporary accommodation which will be required by a contractor during the construction of ten detached dwelling houses. **4**

(40)

Marks

SECTION B

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

9. (*a*) Briefly describe the ground conditions which would require the use of the following foundation types:

- deep strip foundation
- raft foundation
- pad foundation
- short bored pile. **4**

(*b*) Prepare an annotated sketch to show each of the foundation types listed in Q9(*a*). **8**

(*c*) A door and door frame have to be fitted into an internal half brick thick wall. The wall is finished with 12 mm plaster to both sides.

Show by means of an annotated sketch a typical plan detail of the construction using the following timbers:

- door frame
- planted door stop
- door
- architrave (facing). **6**

(*d*) Briefly explain each of the following terms when used in timber stair construction:

- riser
- going
- newal post
- pitch line. **4**

(*e*) **Worksheet Q9(*e*)** shows an incomplete vertical section through the external wall and substructure of a timber frame house with a suspended timber floor.

On the **Worksheet**, complete the detail to show the following components:

- ring beam
- joists
- sole plate
- timber studs
- damp proof course
- breather membrance
- sheathing
- insulation. **8**

(30)

[Turn over for Questions 10 and 11 on *Page four*

Marks

10. (*a*) Briefly describe how the following construction materials should be stored on site:

- roof trusses
- uPVC windows
- bags of Portland cement
- facing bricks. **8**

(*b*) Briefly explain **three** key factors which must be considered when planning the establishment of a construction site. **6**

(*c*) Briefly describe how the following floor finishes should be applied to a suspended timber floor:

- timber laminate flooring
- quarry tiles. **4**

(*d*) A foundation trench 1·5 metres deep requires support.

(i) Briefly describe, with the aid of an annotated sketch, the trench support arrangements and indicate the health and safety requirements. **6**

(ii) Ready mix concrete is required to be placed in this trench.
Briefly explain the following terms relating to fresh concrete:

- compaction
- curing. **6**

(30)

11. (*a*) Briefly describe, with the aid of an annotated sketch, the *Vane test* used during ground investigation. **6**

(*b*) Briefly describe **three** sources of information an engineer would use to assist in a site investigation. Provide a brief explanation of the three sources of information you have selected. **6**

(*c*) Briefly explain what is meant by *site reconnaissance* and state two advantages of undertaking such a reconnaissance. **6**

(*d*) (i) With reference to stair construction, briefly explain what is meant by the following terms:

- closed stringer
- open cut stringer
- winder (kite winder). **6**

(ii) Briefly explain the relationship between the pitch line, total rise and total going. **6**

(30)

[*END OF QUESTION PAPER*]

FOR OFFICIAL USE

X227/302

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BUILDING CONSTRUCTION
HIGHER
Worksheets for Questions 1(*a*), 1(*b*), 3 and 9(*e*)

Fill in these boxes and read what is printed below.

Full name of centre

Town

Forename(s)

Surname

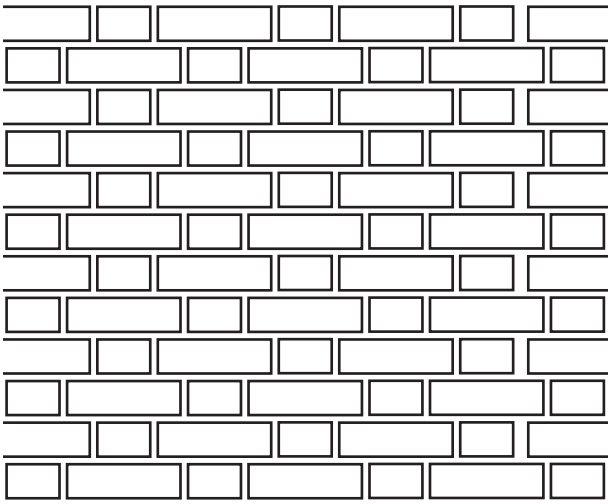
Date of birth
Day Month Year

Scottish candidate number

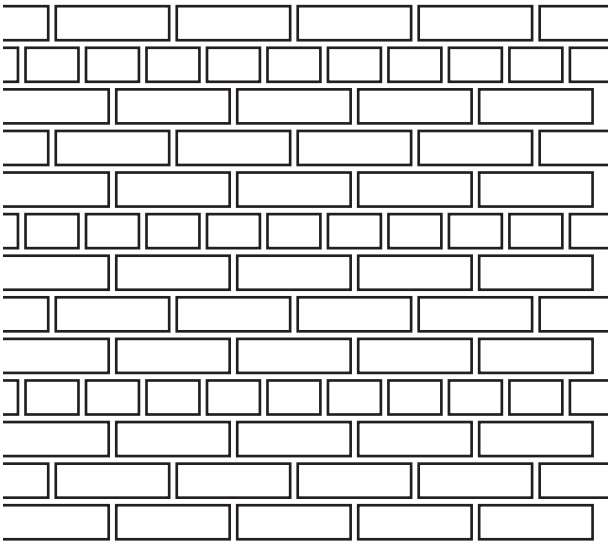
Number of seat

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

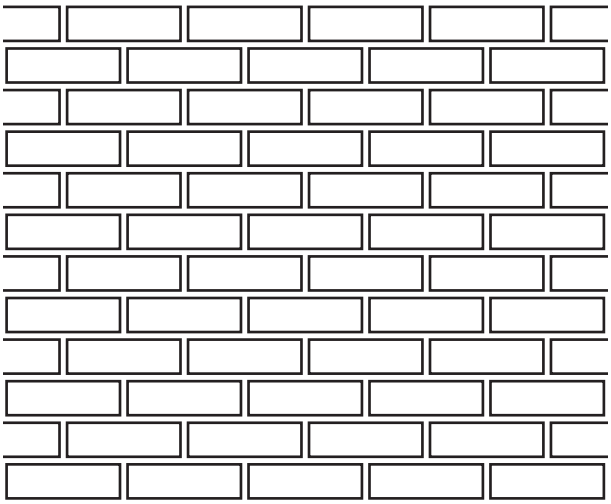
WORKSHEET Q1(*a*)



(i) _____

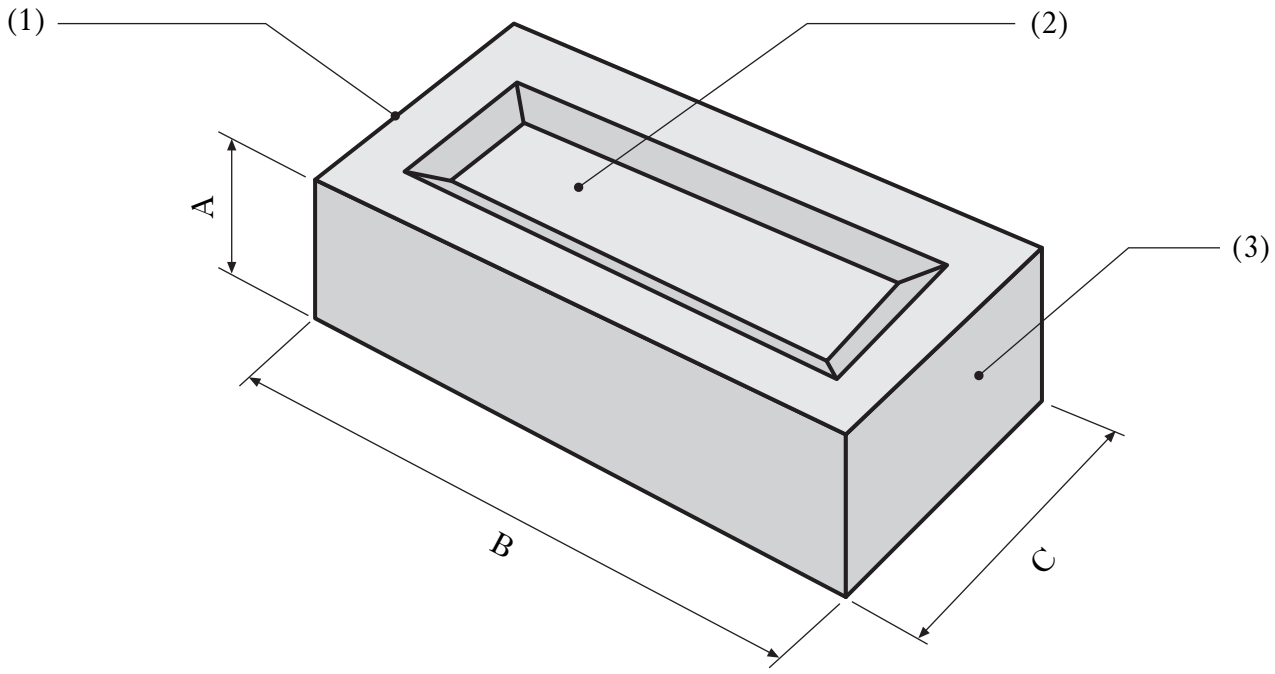


(ii) _____



(iii) _____

WORKSHEET Q1(*b*)



(1) _____

(2) _____

(3) _____

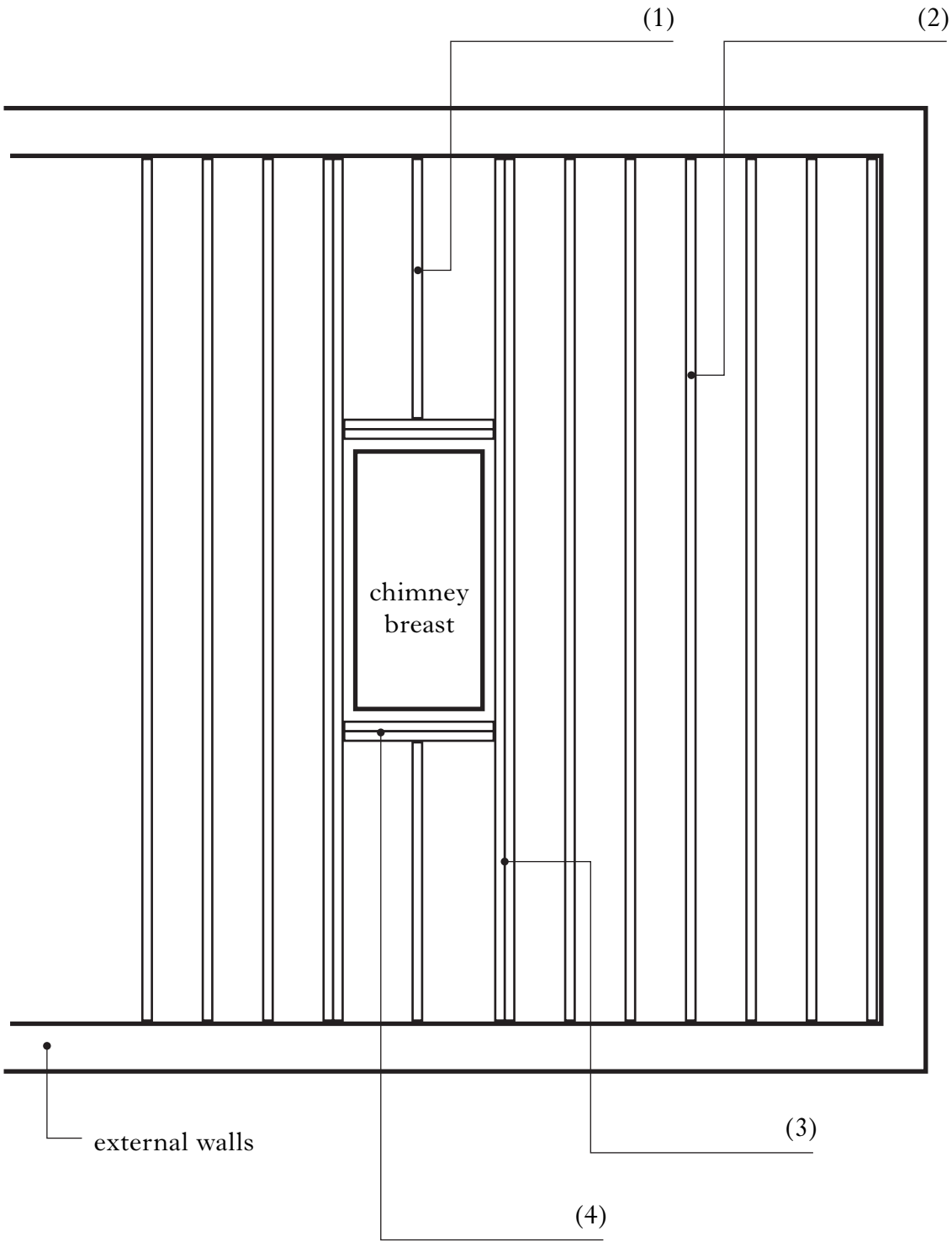
Dimension A _____

Dimension B _____

Dimension C _____

[Turn over

WORKSHEET Q3



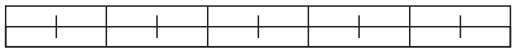
(1) _____

(2) _____

(3) _____

(4) _____

WORKSHEET Q9(*e*)



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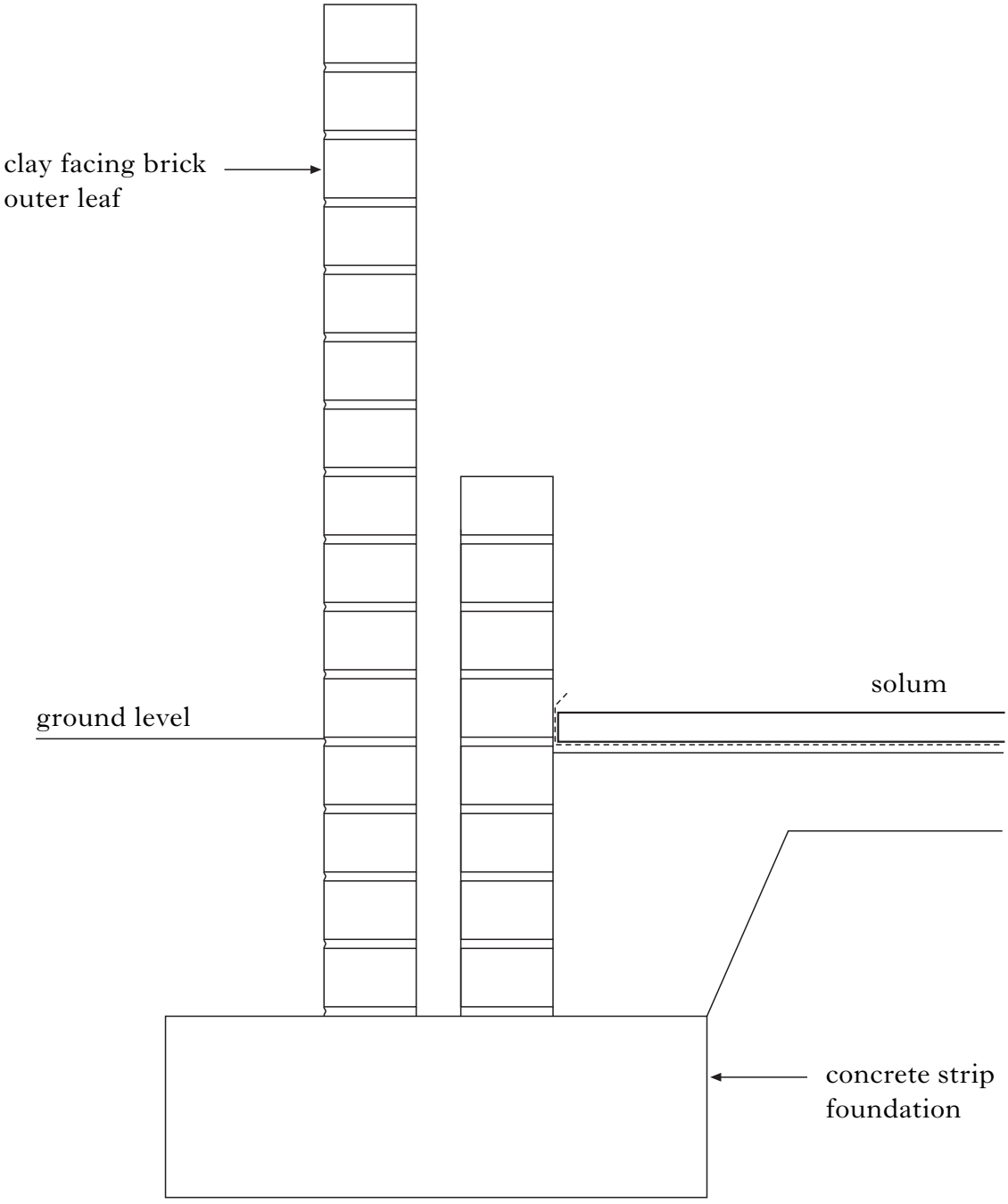

[*END OF WORKSHEETS*]

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