higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ARCHITECTURAL GRAPHICS AND TECHNOLOGY

(Second Paper)

NQF LEVEL 3

(12050633)

20 November 2019 (X-Paper)
09:00–12:00

Calculators may be used.

This question paper consists of 6 pages.

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TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. The sketches and/or diagrams must be neat, reasonably large, in proportion, fully labelled and done in pencil.
5. All drawing work must comply with the relevant SANS (SABS) recommended codes.
6. Brick sizes should be taken as 220 × 110 × 75 mm.
7. ALL the abbreviations and symbols must comply with the latest National Building Regulations and all relevant SANS (SABS)-codes.
8. Write neatly and legibly.

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QUESTION 1

1.1 During a project life cycle certain information, such as time, cost, project status, project activities, etc. needs to be communicated to the different members involved on the construction side of the project.

Explain the information to be communicated pertaining to the following:

1.1.1 Time

1.1.2 Cost

(2 × 2) (4)

1.2 Explain the purpose of the communication between the *architect a*nd *principal contractor.* (6)

1.3 State ONE advantage for the following methods of communication:

1.3.1 Pictures and drawings

1.3.2 Feedback and monitoring work

1.3.3 Management reports

1.3.4 Graphic communication

(4 × 2) (8)
[18]

QUESTION 2

2.1 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (2.1.1–2.1.8) in the ANSWER BOOK.

2.1.1 Building plans are working drawings that are drawn to scale and include dimensions.

2.1.2 A damp-proof course is used under the concrete slab in a substructure.

2.1.3 The term *construction drawing* is generic in that it includes all drawings needed by various tradespeople to complete a building project.

2.1.4 *Elevation* is the word used in the building industry meaning 'the point of view chosen when looking at a building'.

2.1.5 A project manager does not manage the entire construction of a project for a client.

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2.1.6 A client starts the building process by commissioning an architect to design the dwelling.

2.1.7 An SG diagram is a drawing that is compiled by a registered land surveyor, indicating positions and lengths of site boundaries, as well as coordinates and angles to determine its position and size relative to the surrounding land.

2.1.8 Site plans are never drawn to a scale of 1:200.

(8 × 1) (8)

2.2 Make a freehand sketch, in good proportion, of a single-wall foundation.

Label the following on the sketch:

- DPC
- Screed
- Concrete slab 75 mm thick
- Foundation wall
- Strip foundation 400 × 200

(10)
[18]

QUESTION 3

3.1 Explain what is meant by the term *construction drawings* (working drawings). (10)

3.2 Schedules are used for specification requirements and are normally presented in a tabular layout. Schedules are used when items are repeated for the same specification.

Name SEVEN examples of schedules that can be issued on a construction project. (7)

3.3 An architect can include notes on drawings that serve to be brief reminders that specifications must be consulted.

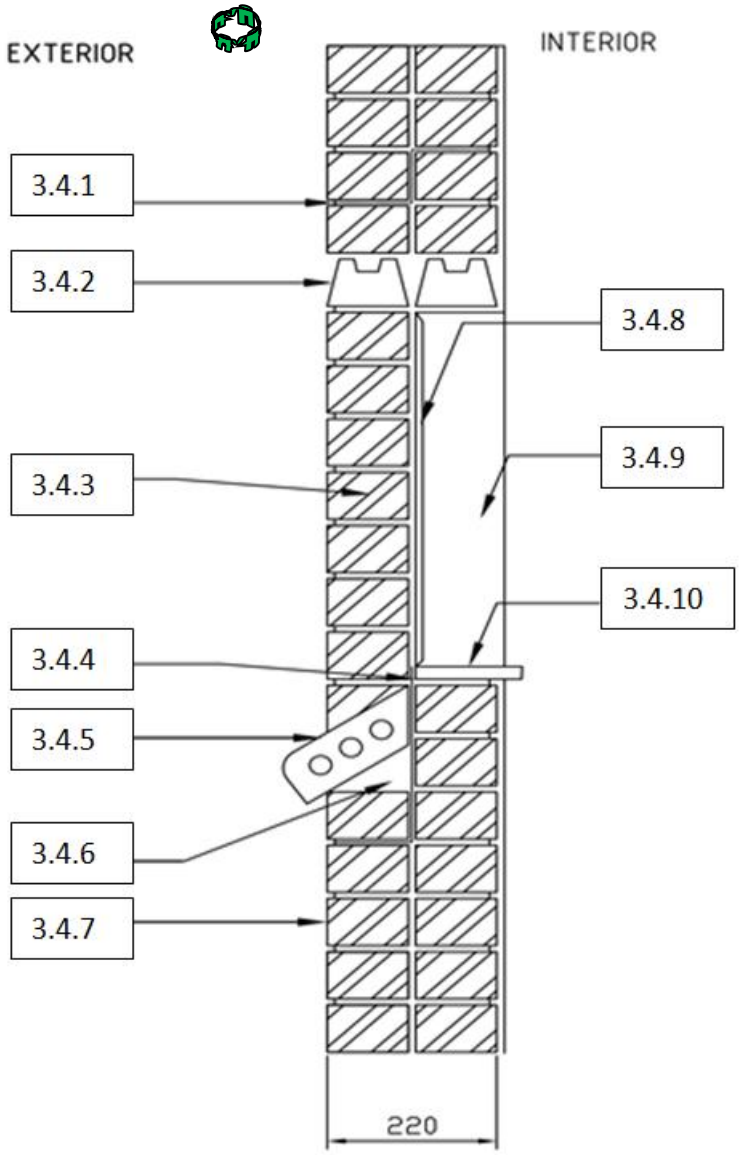
Explain the following:

3.3.1 Prime cost sums

3.3.2 Provisional sums

(2 × 3) (6)

3.4 Choose a term from COLUMN B that matches a part in COLUMN A for the typical cross section through a steel window-frame opening in a double-leaf structural masonry wall. Write only the letter (A–L) next to the question number (3.4.1–3.4.10) in the ANSWER BOOK.

COLUMN A	COLUMN B
	A brick force B steel window frame C precast concrete lintel D plastered reveal E face brick reveal F bricks G tile sill H bull nose exterior sill I ring beam J polysulphide sealant K cement mortar L DPC

(10 × 1) (10)

3.5 Explain what a *ring beam* is and where it is used. (2)

[35]

QUESTION 4

4.1 Define the following terms:

4.1.1 King post

4.1.2 Live loads

4.1.3 Dead loads

(3 × 2) (6)

4.2 Give a description of the following types of trusses:

4.2.1 Cut-off (bobtail, stub-end)

4.2.2 Piggyback (three-piece)

4.2.3 Flat or parallel chord

(3 × 3) (9)

4.3 Draw a single-line drawing of:

4.3.1 A butterfly truss

4.3.2 An asymmetrical pitch truss

(2 × 2) (4)
[19]

QUESTION 5

Draw a single-line drawing of each of the following different types of windows and window frames used in construction:

5.1 Side-hung casement window

5.2 Top-hung casement window

5.3 Louvered window

5.4 Double-hung sash window

5.5 Composite sliding window

(5 × 2) **[10]**

TOTAL: 100

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