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)

8 December 2020 (Y-paper)
13:00–16:00

Calculators may be used.

This question paper consists of 5 pages and 1 addendum.

395Q2N2008

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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 done in pencil, must be neat, reasonably large, in proportion and fully labelled.
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 Communication is vital on any construction project. The client's needs and expectations are sometimes compromised due to poor communication or a lack thereof.

Give FOUR examples of these challenges. (4)

1.2 Discuss the responsibilities and communication between contract manager and the site manager. (4)

1.3 Choose an item from COLUMN B that matches a description in COLUMN A. Write only the letter (A–D) next to the question number (1.3.1–1.3.4) in the ANSWER BOOK.

COLUMN A		COLUMN B	
1.3.1	Good form of communication between participants	A	legal contract
1.3.2	Drawings are sometimes used in a court of law	B	drawings
1.3.3	Drawings are visualised before construction begins on a project	C	site plan
1.3.4	Building positions are indicated on drawings	D	3D models

(4 × 1) (4)

[12]

QUESTION 2

2.1 Explain the purpose of presentation drawings, which form part of the different types of construction drawings. (5)

2.2 List the FOUR important aspects of freehand drawings. (4)

2.3 Name FOUR other wind directions besides North, South, East and West after which elevations can be named. (4)

2.4 State the responsibilities of a resident engineer. (4)

[17]

QUESTION 3

3.1 FIGURE 1 in the ADDENDUM (attached) shows a drawing of the superstructure of a building. Name the items in the superstructure by writing the answers next to the alphabet letters in the ANSWER BOOK. (12)

3.2 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (3.2.1–3.2.10) in the ANSWER BOOK.

3.2.1 A fascia board is nailed to the rafters below the roof edge.

3.2.2 The underside of a roof overhang is known as a soffit.

3.2.3 Dimensions are not used to determine the size of an object.

3.2.4 Ring beams are concrete beams built around the perimeter at the top of the wall.

3.2.5 Weep holes are for cleaning cavity walls where debris accumulates between the brick walls.

3.2.6 Strengthening of foundations is done by using reinforcing steel bars.

3.2.7 Excavation takes place before foundations are cast.

3.2.8 Mesh reinforcement is used in the concrete bed of a building to prevent cracking of the bed.

3.2.9 Concrete beds are covered in screed to create smooth floor finish for tiling or for carpeting.

3.2.10 Windows are built into the substructure of a building to ventilate the area.

(10 × 1) (10)

3.3 List FIVE different scales used when drawing cross sectional and detailed scale working drawings. (5)

3.4 Explain the difference between *DPC* and *DPM*. (2)

3.5 Waffle foundations are designed according to the engineer's specifications.

State SIX features that will distinguish a waffle foundation design. (6)

3.6 List the most important factors to point out and label on the sectional drawing of a waffle raft foundation with an edge beam (FOUNDATION ONLY). (5)

[40]

QUESTION 4

4.1 Draw a well proportioned freehand sketch of a fink truss and insert the following roof annotations:

- Panel length
- Peak
- Lateral brace
- Rafter
- Tie beam
- Heel
- Web
- Truss plate
- Wall
- Wall plate (10)

4.2 Explain what a pitch truss is. (5)

4.3 Give an alternative term for each of the following terms:

4.3.1 Beam

4.3.2 Slope

4.3.3 Top chord

4.3.4 Tie beam

(4 × 1) (4)

4.4 Name FIVE different types of timber roof structures. (5)
[24]

QUESTION 5

5.1 Explain the purpose of a door and how doors can differ from one another. (5)

5.2 Define the following terms used for door and window frames:

5.2.1 Head

5.2.2 Panel

(2 × 1) (2)
[7]

TOTAL: 100

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ADDENDUM

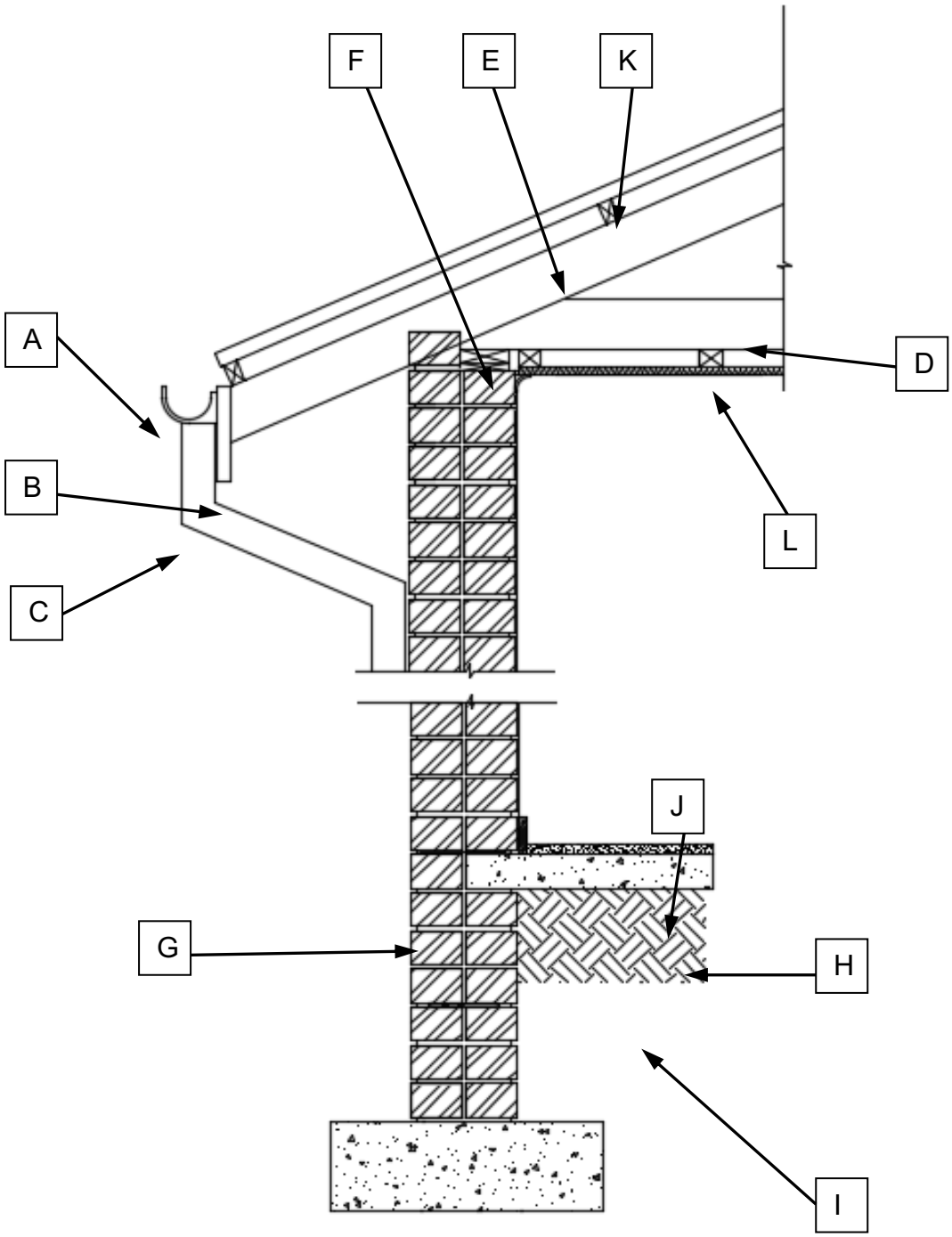

FIGURE 1

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