higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ARCHITECTURAL GRAPHICS AND TECHNOLOGY

(Second Paper)

NQF LEVEL 2

(12050622)

13 March 2018 (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. ALL drawing work, including candidate information, must be done in pencil.
5. ALL drawing work must comply with the relevant SANS ('SABS') recommended codes.
6. ALL abbreviations and symbols must comply with the latest National Building Regulations and ALL relevant SANS ('SABS') codes.
7. A balanced layout is very important and candidates will be penalised for poor planning.
8. The sketches and/or diagrams must be done in pencil and be neat, reasonably large, in proportion and fully labelled.
9. Write neatly and legibly.

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QUESTION 1: GENERAL

1.1 Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

1.1.1 Dimensions are …

A notes.
B annotations.
C measurements.
D details.

1.1.2 The meaning of IC:

A Invert chamber
B Inspection channel
C Inspection chamber
D Invert channel

1.1.3 The colour of new brick masonry and new work on a plan:

A Yellow
B Green
C Blue
D Red

1.1.4 All alterations and new homes being built must comply with the …

A League of SA Accountants.
B National Building Regulations 0400.
C Clay Brick Manufacturers Guild.
D Portland Cement Principles.

1.1.5 The three green-design pillars:

A Energy, water and material efficiency
B SAID, SACAP and SAIAT
C Building, municipal and council regulations
D Strip, pile and raft foundations

1.1.6 Grey water is waste water generated from …

A commercial buildings.
B daily domestic use.
C human sewerage.
D cattle.

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1.1.7 The masonry bond that is the simplest method to build a wall and consists of identical courses with long brick faces laid end to end:

A James bond
B English bond
C Flemish bond
D Stretcher bond

1.1.8 The underside edge of an arch when seen from the front:

A Soffit
B Intrados
C Skewback
D Extrados

1.1.9 The highest point of an arch:

A Empire
B Crown
C Key brick
D Intrados

1.1.10 The end of a wall:

A Edge
B Stopped end
C End wall
D Skewback

(10 × 2) (20)

1.2 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (1.2.1–1.2.5) in the ANSWER BOOK.

1.2.1 Clay bricks are either solid or have cores in them. Cores are the small holes made in the centre of clay bricks to ensure that the bricks do not slide when placed on wet mortar.

1.2.2 A geotechnical investigation is carried out at the end of the building project to determine if the structure has been built correctly.

1.2.3 The dangers of founding a structure on unconsolidated fill or fill that is not compacted, is that cracking of the superstructure can happen after building is complete.

1.2.4 In arches the key brick is the first brick built into position at the crown of the arch.

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1.2.5 A semi-elliptical arch is also referred to as a three-centred arch.

(5 × 2) (10)

1.3 Complete the following sentences by using the words given in the list below. Write only the word or words next to the question number (1.3.1–1.3.7) in the ANSWER BOOK.

sections; details; staff; glass windows; elevations; accidents; aluminium; indemnity; precast commercial; NBRs; NBAs

1.3.1 ... on drawings show the exterior faces of the building when viewed from different directions. (1)

1.3.2 ... are drawn vertically through a building in a position to provide maximum information on the building. (1)

1.3.3 ... are drawings that separate certain elements of work to clarify the construction method required. They are normally drawn to a larger scale to leave no doubt as to what is needed. (1)

1.3.4 Do not use a/an ... staff when overhead electrical wires can come into contact with the top of the … (2)

1.3.5 A construction contractor has to take out different insurances. TWO of these are insurance against ... and ... insurance. (2)

1.3.6 To protect us from the elements and be able to enjoy the effects of sunlight and visibility we use ... which need to be approved by the ... (2)

1.3.7 You would use a ... lintel over openings up to 3 000 mm wide. (1)

[40]

QUESTION 2: TERMINOLOGY AND COMPONENTS OF THE CONSTRUCTION INDUSTRY

Describe each of the following components and materials used when building a residential masonry home:

2.1 Facade

2.2 Concrete

2.3 Damp-proof membrane (DPM)

2.4 Bricks and blocks

2.5 Fascia

(5 × 2) **[10]**

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QUESTION 3: MEASURING, SETTING OUT AND LEVELLING

3.1 Explain the concept *measuring* and give the purpose thereof. (5)

3.2 List FIVE types of equipment used for measuring. (5)

3.3 List THREE ways to take care of a steel tape measure. (3)

3.4 Explain the concept *setting out* and give the purpose thereof. (5)

3.5 How can an error of parallax be avoided when using measuring instruments? (2)
[20]

QUESTION 4: FOUNDATIONS

Explain under which conditions one would construct each of the following foundations and why:

4.1 Raft foundations

4.2 Strip foundations

4.3 Pile foundations

(3 × 4) **[12]**

QUESTION 5: BRICKWORK, LINTELS AND ARCHES

5.1 Which THREE components are precast concrete made of? (3)

5.2 Define each of the following arch terms:

5.2.1 Keystone

5.2.2 Crown

5.2.3 Soffit

5.2.4 Span

5.2.5 Intrados

(5 × 2) (10)

5.3 Name any TWO of the three types of finishes associated with arches. (2)

5.4 Name THREE shapes of an arch. (3)
[18]

TOTAL: 100

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