higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T120(**E**)(A10)T

NATIONAL CERTIFICATE

BUILDING AND CIVIL TECHNOLOGY N3

(11010273)

10 April 2018 (X-Paper)
09:00–12:00

This question paper consists of 7 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
BUILDING AND CIVIL TECHNOLOGY N3
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. Drawings must be done in pencil.
5. Write neatly and legibly.

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QUESTION 1

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 The ... is the designer and manager of the project.

A clerk of work
B architect
C client
D local authority

1.1.2 A/An ... submits her/his tender price to the architect within the stipulated time.

A engineer
B owner
C contractor or sub-contractor

1.1.3 A ... is responsible for the smooth running of the branch office or contract.

A town planner
B supervisor
C site supervisor
D contracts manager

1.1.4 A ... sees to it that the trenches are according to the specified width and depth.

A bricklayer
B supervisor
C carpenter
D excavator

1.1.5 A/An … checks that glass has been properly back puttied and cleaned off.

A internal works
B glazier
C electrician
D plumber

1.1.6 A .... takes samples and test cubes as directed.

A bricklayer
B site supervisor
C concreter

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1.1.7 A … checks that no tears exist between coatings.

A glazier
B plasterer
C carpenter
D painter

1.1.8 A/An .... checks that glass has been properly back puttied and cleaner.

A Internal works
B glasier
C electrician
D plumber

1.1.9 A … checks the contour levels from dwelling to connection point.

A plasterer
B roofer
C drain layer
D concreter

1.1.10 A … sees to it that no laborer pushes a loaded wheelbarrow across PVC conduits.

A concreter
B bricklayer
C plumber
D electrician

(10 × 1) (10)

1.2 State FOUR requirements for good communication. (4)

1.3 Name TWO ways of communication. (2)
[16]

QUESTION 2

2.1 Make a large, neat sketch of a vertical section through a cavity wall built on a reinforced strip foundation. Include the following details:

2.1.1 Cavity wall

2.1.2 Strip foundation

2.1.3 Breadth of foundation

2.1.4 Cavity wall filled with at least 150 mm damp-proof course from DPC

2.1.5 Reinforcement in foundation

2.1.6 Damp-proof course (8)

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2.2 Name FIVE materials that can be used for damp proofing to prevent the passage of water and to act as a barrier against penetration. (5)

2.3 Explain the term *foundation*. (3)
[16]

QUESTION 3

3.1 Calculate how much water (liters) you would need in the following situation:

250 kg of cement with water-cement ration of 0,4. (3)

3.2 What will be the concrete coverage for steel reinforcement of the following:

3.2.1 Reinforced concrete beam

3.2.2 Reinforced concrete slabs

3.2.3 Reinforced concrete foundation

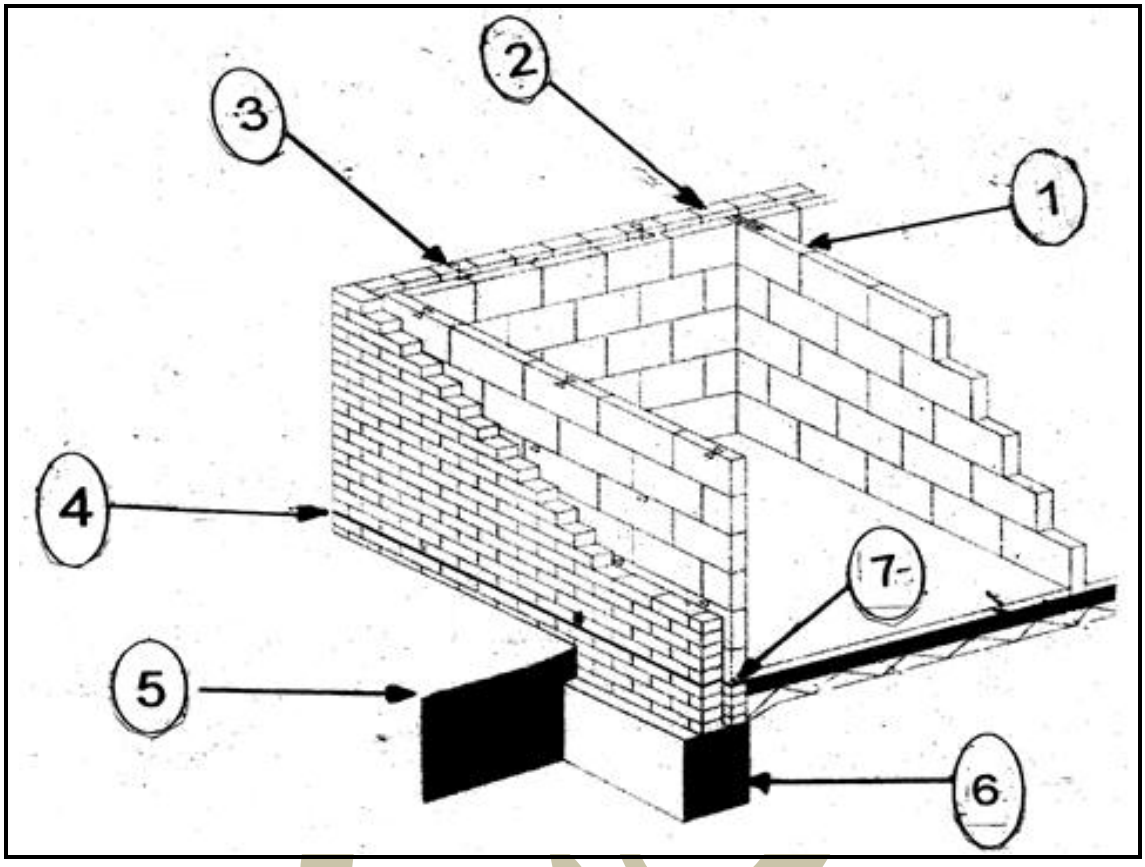
3.2.4 Reinforced concrete columns

(4 × 1) (4)

3.3 Give TWO reasons why pointing and jointing should carry on. (2)

3.4 The purpose of a cavity is to prevent rain penetrating to the inner skin and to improve the insulation proper tie of the wall.

Name the SEVEN parts that are found on this cavity wall. Write the answer next to the number (1–7) in the ANSWER BOOK.



(7)
[16]

QUESTION 4

4.1 Write down the following abbreviations in full:

4.1.1 SVP

4.1.2 ST

4.1.3 V

4.1.4 WB

4.1.5 GL

4.1.6 FD

(6 × 1) (6)

4.2 State FOUR advantages of a pressure valve geyser. (4)

4.3 Make a neat, large sketch of a structural steel beam and a secondary beam. Clearly show the main beam, secondary beam, shop connection and web cleat. (6)

[16]

QUESTION 5

5.1 Make a large, neat sketch of a light controlled by a two-way switch. (5)

5.2 The main function of a distribution board is to distribute electrical power from its source to all other points of use.

State THREE places where it is not permitted to install distribution boards. (3)

5.3 Name and explain FOUR factors which should be considered when selecting floor finishings. (4 × 2) (8)

[16]

QUESTION 6

6.1 A one-brick wall of 20 m long and 3 m high has to be built with a door opening of 2 m × 2 m and a window opening of 2 m × 1,5 m.

The following details apply:

Labour = R250 per m^2
50 bricks per m^2 for half-brick wall
1 m^3 of sand = 1 000 kg (1 tonne)

Calculate the following:

6.1.1 The total area of the wall (4)

6.1.2 The amount of bricks needed (2)

6.1.3 The amount of sand needed (2)

6.1.4 The labour cost to build the wall (2)

6.2 6.2.1 Give FOUR reasons why paving is necessary after completion of a project. (4)

6.2.2 Briefly explain why edging is important when paving is done. (1)

6.3 Gravel roads are used in certain conditions where there is no heavy traffic, or in rural areas.

State THREE common causes of poor performance of gravel roads. (3)

6.4 List TWO points which must be considered when designing particular pavement factors. (2)

[20]

TOTAL: 100

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