higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

BUILDING AND CIVIL TECHNOLOGY N3

(11010273)

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09:00–12:00

This question paper consists of 6 pages.

231Q1A2014

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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. Start each section on a new page.
5. Use only a black or blue pen.
6. Write neatly and legibly.

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QUESTION 1

1.1 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (1.1.1–1.1.12) in the ANSWER BOOK.

1.1.1 The contract manager will lease to those professionals whose services are retained in terms of the contract.

1.1.2 One of the functions of the owner is to consult with the clerk of works and supply him/her with all relevant data about the proposed work, such as space, location, costs, use of the new building and time limits.

1.1.3 The purpose of communication is to inform people about what not do, how not to do it and when not to do it.

1.1.4 The role of the contractor is to honour the defects liability clauses in the contract.

1.1.5 Dismissal means an employer has terminated a contract of employment with or without notice.

1.1.6 The architect must prepare drawings and calculate costs in line with what the owner is prepared to pay.

1.1.7 The Compensation for Occupational Injuries and Diseases Act stipulates that no periodical payments shall be made in respect of temporary partial disablement which lasts for three months or more.

1.1.8 The clerk of works checks the quality of the workmanship as the job progresses.

1.1.9 The site supervisor ensures that a slow rate of progress is maintained to ensure quality.

1.1.10 The primary function of planning in the building industry is to make the most efficient and economical use of labour, machines, materials and methods.

1.1.11 A leader should have the ability to demonstrate how work should be done in a construction.

1.1.12 It is the responsibility of the owner to take over the payment of insurance policies from the contractor, which are necessary for the safety and keep of the completed building.

(12 × 1) (12)

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1.2 Explain the functions of each of the following related to the building industry:

1.2.1 Engineer

1.2.2 Local authority

(2 × 2) (4)
[16]

QUESTION 2

2.1 Make a large, neat sketch to show the methods of checking and setting out each of the following:

- Base line
- Datum post
- Profile boards
- Diagonal checks
- Site boundary
- Main setting out of lines (8)

2.2 Make a neat sketch of a vertical section of a cavity wall built on a reinforced strip foundation and show the following details:

- Reinforcement
- Cavity wall
- Damp-proof course
- Cavity filled at least 150 mm from the DPC
- Width of foundation
- Strip foundation (8)
[16]

QUESTION 3

3.1 List FIVE factors that influence the hardening and strength of a concrete mixture. (5)

3.2 Briefly explain each of the following terms:

3.2.1 Coarse aggregate

3.2.2 Fine aggregate

(2 × 3) (6)

3.3 Give FOUR steps to follow when conducting a slump test. (4)

3.4 Define the term *mortar*. (1)
[16]

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QUESTION 4

4.1 Give FOUR advantages of a combination geyser. (4)

4.2 Write each of the following plumbing abbreviations in full:

4.2.1 R

4.2.2 BT

4.2.3 WB

4.2.4 G

4.2.5 D

4.2.6 W

(6 × 1) (6)

4.3 Briefly explain the difference between each of the following:

4.3.1 M5

4.3.2 V5

(2 × 1) (2)

4.4 Make a large, neat sketch of a single V-butt joint and show the following:

4.4.1 Penetration

4.4.2 Parental metal

4.4.3 Throat

(4)
[16]

QUESTION 5

5.1 Briefly explain each of the following terms used in painting:

5.1.1 Sandblasting

5.1.2 Acid pickling

5.1.3 Flame cleaning

(3 × 2) (6)

5.2 Give TWO types of paints. (2)

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5.3 Make a large, neat sketch of a vertical section through the bottom section of a timber wall panelling and show the following:

- Ground
- Spacer block
- One-brick wall
- Flooring
- Bottom rail
- Skirting
- Quadrant
- Airbrick

(8)
[16]

QUESTION 6

6.1 Briefly explain each of the following road buildings:

6.1.1 Crown of the road

6.1.2 Haunch

6.1.3 Fine cold asphalt

6.1.4 Wearing course

(4 × 1) (4)

6.2 Explain where granolithic flooring is used. (2)

6.3 Explain where clay-tile flooring is used. (2)

6.4 A one-brick wall has a length of 16 m and a height of 3 m. The wall has a door opening 2 m high and 1,8 m wide and a window opening 1,5 m wide and 1,5 m high. Labour cost is R200 per m^2.

NOTE: Half-brick walling (50 bricks/m^2)
1 m^3 sand = 1 000 kg (1 tonne)

Calculate each of the following:

6.4.1 Area of the wall (6)

6.4.2 Amount of bricks required (2)

6.4.3 Amount of sand required (2)

6.4.4 Labour cost (2)
[20]

TOTAL: 100

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