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higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T110(E)(J22)T
AUGUST 2010

NATIONAL CERTIFICATE

BUILDING AND CIVIL TECHNOLOGY N3

(11010273)

22 July (X-Paper)
09:00 – 12:00

Non-programmable calculators may be used.

This question paper consists of 6 pages.



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. ALL the sketches must be clear, of good proportion and properly labelled.
 4. Rule off across the page on completion of each question.
 5. ALL work you do not want to be marked, must be clearly crossed out.
 6. Number the answers correctly according to the numbering system used in this question paper.
 7. Write neatly and legibly.
-

QUESTION 1

1.1 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (1.1.1 – 1.1.16) in the ANSWER BOOK.

- 1.1.1 The roofer sees that sheet iron is well lapped, jointed and wedged.
- 1.1.2 The contractor has to honour the defects liability clauses in the contract.
- 1.1.3 A Health and Safety Committee shall keep record of each recommendation made to an employer in terms of subsection (1)(a) of the Occupational Health and Safety Act and of any report to an inspector in terms of subsection (1)(b) of the Occupational Health and Safety Act.
- 1.1.4 The owner's responsibility is to attend meetings prior to the commencement of work and during construction.
- 1.1.5 Communication is the mutual exchange of ideas and the interpretation of messages and signals.
- 1.1.6 Once the owner is satisfied with the design, he/she signs a contract with the architect.
- 1.1.7 The electrician checks for any underground cables, if any.
- 1.1.8 The contractor, after completion, hands over the project.
- 1.1.9 Dismissal means that an employer has terminated the contract of employment with or without notice.
- 1.1.10 The carpenter checks that all mitres are properly cut and scribed.
- 1.1.11 The bricklayer checks that the building is rising true by sighting across.
- 1.1.12 The glazier sees that all finishes are true and smooth.
- 1.1.13 A Health and Safety Committee holds meetings twice a year.
- 1.1.14 The architect is the designer and manager of the project.
- 1.1.15 The plasterer checks that all surfaces are properly keyed.
- 1.1.16 The plumber checks that ironmongery is as specified.

[16]

QUESTION 4

- 4.1 Make a large, neat, vertical sketch through the structure of a structural steel column which is fixed to a concrete base and label ALL the details. (8)
- 4.2 Give the abbreviations for the following:
- 4.2.1 Flushing valve
 - 4.2.2 Rainwater pipe
 - 4.2.3 Wash basin
 - 4.2.4 Inspection chamber
 - 4.2.5 Urinal (5)
- 4.3 Make a neat, large sketch of a butt welded joint. (2)
- 4.4 If you are the site foreman and a load of unmarked timber is delivered to the site, what are you supposed to do? (1)
- [16]**

QUESTION 5

- 5.1 Make a neat, large sketch in the ANSWER BOOK of an earthing symbol and describe the purpose of earthing. (4)
- 5.2 Briefly explain the following terms used in painting:
- 5.2.1 Knot, prime and stop (3)
 - 5.2.2 Flame cleaning (1½)
 - 5.2.3 Sand blasting (1½)
- 5.3 Briefly explain the following defect in plaster:
- Crazing of surfaces (2)
- 5.4 Make a neat, large sketch of a two-way switch with one light. (4)
- [16]**

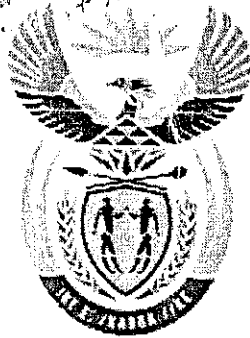
QUESTION 2

- 2.1 Describe, with the aid of a large, neat sketch in the ANSWER BOOK, the methods of checking and setting out the following:
- 2.1.1 Site boundary
 - 2.1.2 Profile boards
 - 2.1.3 Datum post
 - 2.1.4 Main setting out of lines
 - 2.1.5 Base line
 - 2.1.6 Diagonal checks (8)
- 2.2 Make a large, neat vertical sketch in the ANSWER BOOK to show how the collapse of excavation can be prevented. (4)
- 2.3 Name FOUR types of foundations. (4)
- [16]**

QUESTION 3

- 3.1 State THREE disadvantages of a cavity wall. (3)
- 3.2 Calculate how much water you would need (litres) in the following situation: 400 kg of cement with a water:cement ratio of 0,5 (2)
- 3.3 Explain what is meant when builders mention *efflorescence in brickwork*. (2)
- 3.4 What must the concrete coverage for steel reinforcement be for the following:
- 3.4.1 Reinforce concrete slabs (1)
 - 3.4.2 Reinforce concrete columns (1)
 - 3.4.3 Reinforce concrete beams (1)
 - 3.4.4 Reinforce concrete foundations (1)
- 3.5 Name FIVE different types of cement. (5)
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 - 3.4.3 Reinforce concrete beams (1)
 - 3.4.4 Reinforce concrete foundations (1)
- 3.5 Name FIVE different types of cement. (5)
- [16]**

QUESTION 6

6.1 Explain the following terms used on roads:

- | | | |
|-------|-------------------|-----|
| 6.1.1 | Channel | (2) |
| 6.1.2 | Crown of the road | (2) |
| 6.1.3 | Haunch | (2) |
| 6.1.4 | Base | (2) |

6.2 A one-brick wall 25 m long and 3 m high has to be built. The wall has an opening of 2 m wide and 2 m high. Labour costs R300/m².

NOTE: Half brick walling (50 bricks/m²)
1 m³ of sand = 1 000 kg (tonne)

Calculate the following:

- | | | |
|-------|-------------------------------|-------------|
| 6.2.1 | The area of the wall | (3) |
| 6.2.2 | The amount of bricks required | (3) |
| 6.2.3 | The amount of sand required | (3) |
| 6.2.4 | The labour cost | (3) |
| | | [20] |

TOTAL: 100

