



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

APRIL EXAMINATION

BUILDING AND CIVIL TECHNOLOGY N3

30 MARCH 2015

This marking guideline consists of 7 pages.

MARKING INSTRUCTIONS

1. Mark neatly with a red pen.
2. Do not draw lines through wrong answers.
3. Write the marks for each answer in the right margin and the TOTAL for a whole question in a circle in the left margin.
4. Use your own discretion should there be more than one possible correct answer/formula/sketch that does not appear on the memorandum, please evaluate it and allocate marks accordingly.

QUESTION 1

- 1.1 True
- 1.2 True
- 1.3 True
- 1.4 False
- 1.5 True
- 1.6 True
- 1.7 False
- 1.8 False
- 1.9 False
- 1.10 True

(10 × 1) [10]

QUESTION 2

- 2.1
 - 2.1.1 Asphalt✓
 - 2.1.2 Slate✓
 - 2.1.3 Copper✓
 - 2.1.4 Bitumen✓
 - 2.1.5 Lead✓
 - 2.1.6 Polythene✓

(Any 5 × 1) (5)

2.2 Foundation is that part of the building✓ which is built into the ground✓ and which supports the structure as a whole. ✓

(3)

- 2.3
 - 2.3.1 Main bars✓
 - 2.3.2 Starter bars✓
 - 2.3.3 Weak concrete blinding ✓
 - 2.3.4 Reinforced concrete foundation✓
 - 2.3.5 Pad or isolated foundation✓
 - 2.3.6 Ground-floor position✓
 - 2.3.7 75 mm kicker✓

(7 × 1) (7)
[15]

QUESTION 3

3.1 Causes of collapse:

- 3.1.1 Soil that cannot support its own weight✓
- 3.1.2 Weakening trench embankments caused by rain, and frost ✓
- 3.1.3 Vibration in the soil caused by heavy traffic✓
- 3.1.4 The placing of heavy loads of soil too near the side of an excavation✓

- 3.1.5 The type of soil (sand pockets)✓
 3.1.6 Excavation in previously disturbed soil✓
 3.1.7 Heavy objects may impact on the sides of the excavation✓

Safety checks:

- 3.1.8 Know the soil conditions✓
 3.1.9 Be aware of sources of vibration✓
 3.1.10 Look to see where ground has been previously disturbed✓
 3.1.11 Secure the way into and out of the trench✓
 3.1.12 Be aware of any moisture source, cables, and sewers✓
 3.1.13 Position your heavy equipment safely✓
 3.1.14 Watch closely to see what the weather is doing.✓

(7 × 2) (14)

3.2 Volume of concrete = $15 \times 0,710 \times 0,400 \text{ m}^3$ ✓
 = $4,260 \text{ m}^3$ ✓ (2)

3.3 Mass of water = Ratio × Cement
 = $0,4 \times 140$ ✓
 = 56 kg ✓
 = 56 litres ✓ (3)
 [19]

QUESTION 4

Standardisation guarantees large quantities✓ of high-quality timber.✓ It also ensures that parts of furniture as well the completed pieces✓ will be completed according to preset standards.✓ It ensures that the consumer will get value✓ for his/her money.✓ Furthermore it helps manufacturers✓ who use wood to save on costs.✓ Lastly it leads to a better utilisation of the country's resources✓ by allowing the use of so-called inferior timber, like pine, in the furniture industry.✓

[10]

QUESTION 5

- 5.1 5.1.1 Flame cleaning is very effective when removing the scale and rust spots from the metal.√
- 5.1.2 Acid pickling is the treatment that is available in the form of a solution of phosphate which is applied in a coating layer to the steel.√
- 5.1.3 Sand blasting is commonly used and a very effective method of cleaning iron and steel work.√ (3 × 1) (3)
- 5.2 5.2.1 Durability:√ the material to be used must have a reasonable life span.√
- 5.2.2 Resistance:√ the floor material should withstand a heavy load placed on top of it.√
- 5.2.3 Economical:√ the initial capital investment and maintenance of the floor area.√
- 5.2.4 Cleaning operations:√ the floor should be cleaned with ease.√
- 5.2.5 Non-slip qualities:√ the material used for particular traffic or storage purposes should be of non-slip qualities to ensure safety.√
- 5.2.6 Appearance:√ it is important to consider which type of material to apply for a specific room.√ (6 × 2) (12)
- [15]**

QUESTION 6

- 6.1 An independent scaffold stands on its own.√ It has two rows of standards which are connected by transoms.√ Although it is independent,√ it nevertheless requires the additional security of being tied to the building.√ (4)
- 6.2 A mobile scaffold requires a castor wheel, and this scaffold can be used on irregular surfaces where jacking castors are used.√ Mobile scaffolds should not be more than three times higher than their narrowest width√ at the base unless additional support, such as outriggers are used.√ Castor wheels should be fixed in such a way as to prevent accidental displacement.√ (4)
- [8]**

QUESTION 7

- 7.1 7.1.1 The health and safety committee may make recommendations to the employer regarding any matter affecting the health or safety of a person at the workplace.√
- 7.1.2 It shall keep records of each recommendation made to an employer.
- 7.1.3 The committee or a member thereof shall not incur any civil liability by reason of the fact that it or he/she fails to do anything which it or he may or be required to do in terms of the Occupational Health and Safety Act.√
- (3 × 1) (3)
- 7.2 7.2.1 The employer undertakes provision and maintenance of systems of work, plant and machinery that are,√ as far as is reasonably practical, safe and without risks to health.√
- 7.2.2 The employer must eliminate or mitigate any hazard or potential hazard√ to the safety or health of employees.√
- 7.2.3 Employer must establish as far as reasonably practical, what hazards to the health or safety of persons√ are attached to any work which is performed.√
- 7.2.4 Providing the information, instructions, training and supervision as may be necessary to ensure, as far as reasonably practical,√ the health and safety of his employees at work.√
- 7.2.5 Ensuring all employees are informed regarding the scope of their authority√ as contemplated in section 37 of the Act.√
- (5 × 2) (10)
[13]

QUESTION 8

8.1	8.1.1	Area of wall	= 20 m × 3 m = 60 m ² ✓	
		The door opening	= 2 m × 2 m = 4 m ² ✓	
		The window opening	= 2 × 1,5 = 3 m ² ✓	
		Total Area	= 60 – 4 – 3 = 53 m ² ✓	(4)
	8.1.2	Amount of bricks required	= 53 × 100✓ = 5 300 bricks✓	(2)
	8.1.3	Amount of sand required	= 5 300 ÷ 1 000✓ = 5,3 tonnes✓	(2)
	8.1.4	Labour cost	= 53 × R250✓ = R13 250✓	(2)
				[10]
				TOTAL: 100