higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

ARCHITECTURAL GRAPHICS AND TECHNOLOGY
NQF LEVEL 2

15 November 2022

This marking guideline consists of 6 pages.

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INSTRUCTIONS TO MARKERS

1. Mark all the questions.
2. Follow the answers according to the numbering system used in this question paper.
3. Use only a red pen.
4. Put your ticks and crosses neatly and legibly.

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QUESTION 1

1.1	1.1.1	True		
	1.1.2	True		
	1.1.3	False		
	1.1.4	True		
	1.1.5	False		
	1.1.6	True		
	1.1.7	True		
	1.1.8	False		
	1.1.9	False		
	1.1.10	False		
			(10 × 1)	(10)
1.2	2.2.1	CI		
	2.2.2	AO		
	2.2.3	IL		
	2.2.4	IC		
	2.2.5	STP		
			(5 × 1)	(5)
				[10]

QUESTION 2

2.1 Not in the business of building houses.✓ Building his own house✓ and therefore doesn't need to use the NHBRC to assist with a builder/contractor.

2.2 In terms of the Housing Consumers Protection Measures Act, anybody in the business of building houses must register with NHBRC.✓ Once registered, a builder will receive a certificate provided by the CEO of the NHBRC.✓

2.3 Normally involves two parties: one party offers certain services or goods and the other accepts them.✓ A contract must be clearly worded and all terms in it have to be defined because vagueness could cause a contract to be invalid.✓

2.4 Roof tiles are used to cover the timber construction of a roof.✓ They are made from concrete, clay or slate.✓

2.5 A truss consists of rafters, a tie beam and web members.✓ Trusses are normally made of wood, but sometimes they are made of steel. They form the roof construction.✓

(5 × 2) **[10]**

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QUESTION 3

3.1 This is achieved in two stages:

- Rough levelling and centring – Set up the tripod over the survey station and make sure that the tripod is at least shoulder height.✓ The top of the tripod should be roughly level and roughly centred over the station. Foot screws must be at mid-thread position. Now put the theodolite onto the tripod. Make sure that the instrument is level by using the optical plummet so that you can look down the vertical axis and see a small circular target.✓ This represents the axis and is centred on the survey station.✓ If it is not, adjust the foot screws so that the axis base coincides with the survey station.
- Fine levelling and centring – Use the foot screws to do fine levelling. Once this is done, check the optical plummet to make sure the vertical axis has moved off the survey station.✓ If it has, loosen the tripod screw and move the instrument across the top of the tripod.✓ When the optical plummet is centred on the vertical axis, recheck the fine levelling by adjusting the foot screws again.✓ The theodolite should now be centred over the survey station and levelled. (6)

3.2

- Clean a spirit level after use and then wipe it with a small amount of oil to protect it against corrosion.
- Do not drop a level or hit it against something.
- Regularly check the level for correctness.
- Hang the level on the wall or a tool board when it is not in use. (4)

3.3 This technique requires you to create a triangle in the corner of lines that must be at right angles, in other words, 90˚ to each other.✓ The triangle must have one side of the triangle must be 3 units (e.g. metres) long, a second side must be 4 units long and a third must be 5 units long.✓ Any triangle with sides that are 3, 4, and 5 units long will have a 90˚ angle opposite the long (or 5-unit) side.✓ If you need larger triangles, any multiple of 3-4-5 can be used.✓ (4)

3.4

- Levelling is expressed as the relative heights of a few points that are either below or above a certain plane (datum).✓
- Benchmark originates from horizontal marks✓ chiselled by surveyors in stone structures✓ into which an angle iron could be placed to make a shelf for a levelling rod✓ so that a levelling rod is placed in the same place every time✓ and will serve as a benchmark to work from.✓ (6)

[20]

QUESTION 4

4.1
- Soil conditions
- Structural loading
- Type of structure
- Economic factors
- Construction problems
- Time factors relative to the contract period (6)

4.2
- Major injuries and a high risk of deaths.
- High cost to repair or replace the building.
- Settlement and foundation failure.
- Complete collapse of the building.
- Cracking of the superstructure such as walls, concrete slabs and foundations. (5)

4.3 Once you have decided on the type of structure you want to build, you need to find out if the soil where you want to erect the structure is suitable. The soil's capacity to support the structure✓ needs to be investigated.✓ The main objective of the investigation is to determine the soil conditions✓ so that you can select the most appropriate type of foundation.✓ (4)

4.4
- Strip foundations form a stable surface that distributes the weight of load bearing walls over a larger area.✓
- Strip foundations reduce the pressure that walls exert on the soil.✓
- They provide level support on which walls can be built.✓
- They prevent or reduce compaction of the ground as a result of the building.✓
- And they prevent a building from sinking into the soil after heavy rains.✓ (5)

[20]

QUESTION 5

5.1
- Fewer resources are wasted.
- More cost-effective than solid units.
- Lighter than solid units.
- Because they are hollow, services such as pipes and electrical points can be installed in the core of units.
- Less material is used to manufacture a unit. (5)

5.2 5.2.1 Cross joints are the joints formed by the long face of a brick when header courses are laid.✓ They are laid in the same way as header joints.✓

5.2.2 Control joints are planned vertical wall separations.✓ They divide a wall into separate panels.✓

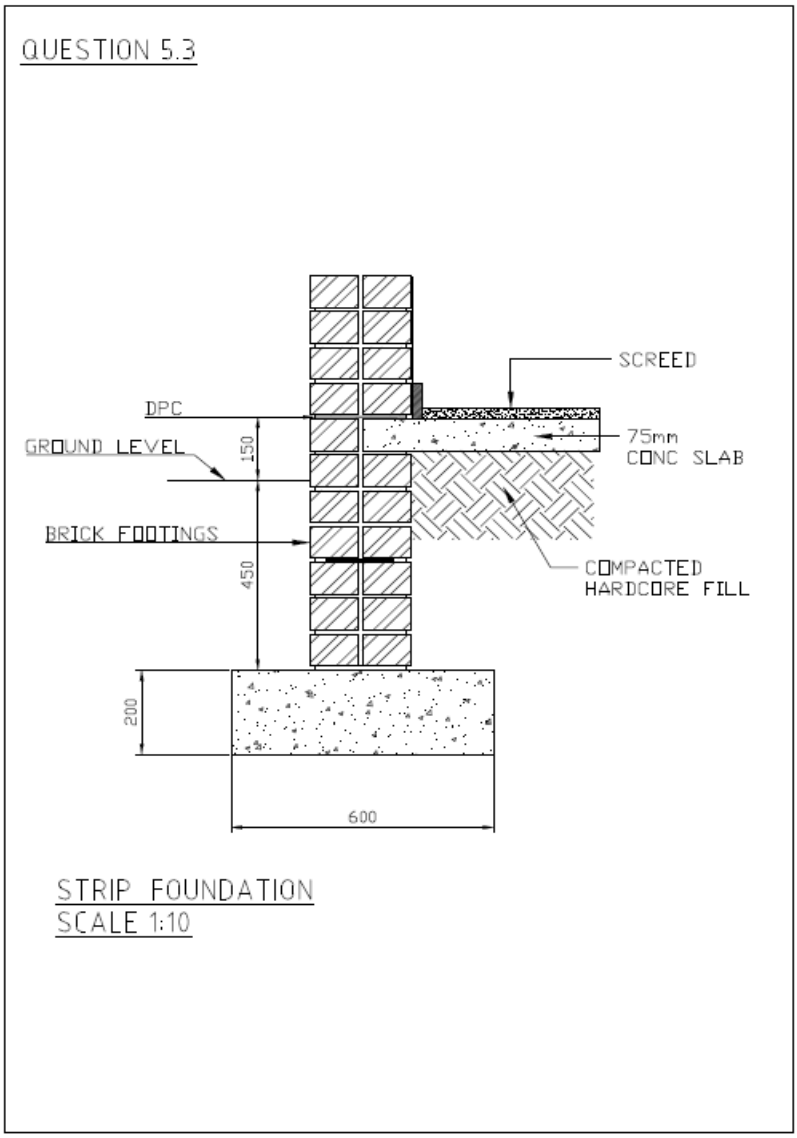
5.2.3 Quoins are the cornerstones✓ of brick or stone walls.✓

5.2.4 A masonry course of bricks laid as headers.✓ A header course is also used to reinforce a wall.✓

5.2.5 A stretcher course consists of identical courses with the long stretcher faces of bricks✓ laid end to end.✓

(5 × 2) (10)

5.3



- Annotations (7)
- Dimensions (4)
- Title and scale (2)
- Correctness of drawing (5)
- Hatching (Marks 0.5 × 4 = 2; Concrete, Hardcore fill, Screed, Masonry) (2)

[35]

TOTAL: 100

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