higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

ARCHITECTURAL GRAPHICS AND TECHNOLOGY

(Second paper)

NQF LEVEL 2

12 March 2020

This marking guideline consists of 4 pages.

Copyright reserved

QUESTION 1

1.1 B
1.2 C
1.3 C
1.4 D
1.5 D
1.6 B
1.7 A
1.8 B
1.9 C
1.10 C

(10 × 2) **[20]**

QUESTION 2: SIMPLE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS

2.1 Natural ground level (3)
2.2 Storm-water pipe (2)
2.3 Cleaning eye (2)
2.4 Wash hand basin (2)
2.5 Rainwater pipe (2)
[11]

QUESTION 3: TERMINOLOGY AND COMPONENTS OF THE CONSTRUCTION INDUSTRY

3.1 This is a building agreement regarding the works, as set out in the agreement certificate document, between the employer and the contractor. The agreement ensures that the building project complies with certain criteria like accuracy, rain penetration, damp-proofing, structural integrity and structural stability.

3.2 The main point of a contract is that the law will compel a party, who has seriously undertaken an obligation, to perform what was promised. A contract agreement and document is binding.

3.3 In terms of Section 10(1) of the Housing Consumer Protection Measures Act 95 of 1998 any person in the home-building business must register with the NHBRC. The certificate to build a home is issued by this body and is valid for one year.

3.4 Energy efficiency, water efficiency, material efficiency, waste and toxins

(4 × 2) **[8]**

Copyright reserved

QUESTION 4: MEASURING, SETTING OUT AND LEVELLING

4.1 Before a new house can be built a surveyor must undertake a thorough measured survey of the existing site. The information obtained is then used to position the new building design. In the construction phase the builder will set out the foundations and the bricklayer will transfer measurements from the drawn plans to the building plot. Setting out is simply the physical transfer onto the ground of what was initially on the plan or in the paperwork. Transferring the architectural draughtsperson's drawing onto the ground is the process of setting out. (5)

4.2 Parallax is an apparent displacement or difference of orientation of an object viewed along two different lines of sight. To avoid the error of parallax when using measuring instruments, always place your eye vertically above the mark that you are reading. If an optical instrument, for example a telescope, microscope, dumpy level or theodolite, is not focused properly, its crosshairs will appear to move with respect to the object focused on if you move your head horizontally in front of the eyepiece. That is why it is important to focus carefully to eliminate the error of parallax. One must always take measurements with one's eye on a line directly perpendicular to the ruler. (10)

4.3 A trammel or template can be used to form large circles, semicircles or arcs. A benefit of using these methods to set out an arch using a rigid bar is that a variety of material found on site, such as timber or boarding, can be used. Very little skill is needed to set out an arch using this method. (3)

[18]

QUESTION 5: FOUNDATIONS

5.1 A raft foundation is determined when the ground being built on is clay. The foundation floats as the clay beneath expands and contracts. It is not as deep in the soil as a strip foundation.

5.2 A strip foundation is determined when the soil being built on is termed stable. It consists of a strip or ribbon that is usually 600 mm wide by 200 mm deep.

5.3 A pile foundation is used for large buildings but in residential application it is where the subsoil has a tendency to sink. It is constructed by boring holes into the ground and filling it with reinforced concrete to form a strong base to support the structure.

5.4 The simplest foundation for a column in a steel or reinforced concrete framed building is the pad foundation or pad base. Pad foundations are suitable for most subsoils except loose sands, loose gravels and filled areas. Pad foundations are usually constructed of reinforced concrete and used to carry the load of a single column.

(4 × 4) **[16]**

Copyright reserved

QUESTION 6: BRICKWORK, LINTELS AND ARCHES

6.1
- Stretcher bond
- English bond
- Flemish bond (3 × 2) (6)

6.2 6.2.1 Vertical distance from the springing line to the highest point of the soffit

6.2.2 Horizontal line drawn through the springing points from which the arch curve starts

6.2.3 Individual wedge-shaped bricks in an arch

6.2.4 Underside of an arch

6.2.5 Upper side edge of an arch

(5 × 3) (15)

6.3 To construct a rough brick arch rough voussoirs or uncut bricks, in which the joints and not the bricks are wedge shaped, are used. This type of arch is usually constructed in half-brick rings to avoid very thick joints that would occur with a 220 mm arch brick. Such arches are used on work that does not require a high standard of finish or work that is to be plastered over. (6)

[27]

TOTAL: 100

Copyright reserved