higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATERIALS
NQF LEVEL 3

(12010273)

3 March 2020 (X-paper)
09:00–12:00

This question paper consists of 5 pages.

229Q1S2003

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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. Use only a blue or black pen.
5. Write neatly and legibly.

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QUESTION 1

1.1 Define the following sections of a tree trunk:

1.1.1 Cambium

1.1.2 Inner bark

1.1.3 Outer bark

1.1.4 Heartwood

1.1.5 Sapwood

(5 × 2) (10)

1.2 State FIVE advantages of hangers. (5)

[15]

QUESTION 2

2.1 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (2.1.1–2.1.5) in the ANSWER BOOK.

2.1.1 Metals are electrical conductors

2.1.2 Metals can be hammered into sheets

2.1.3 Metals are not malleable

2.1.4 Metals can be drawn into wire

2.1.5 Metals are lustrous material

(5 × 1) (5)

2.2 State FIVE advantages of flame cutting. (5)

2.3 2.3.1 Explain the term *metals.* (2)

2.3.2 Name THREE physical properties of different metals. (3)

2.4 State FIVE advantages of laser cutting. (5)

[20]

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QUESTION 3

3.1 Steel is commonly used as a structural framework in the construction of large structures.

Give THREE examples of large structures where steel can be used as a framework. (3)

3.2 State FIVE advantages of mild steel. (5)

3.3 Draw a graph that represents the behaviour of mild steel in the relationship between a stress and a strain curve. (5)

3.4 Draw a simple sketch to show an example of a horizontal steel bracing. (3)

3.5 Explain the behaviour of steel structures in a fire. (4)

[20]

QUESTION 4

4.1 Define the following terms:

4.1.1 Deterioration

4.1.2 Corrosion

4.1.3 Oxidation

(3 × 1) (3)

4.2 Briefly describe the following types of corrosion:

4.2.1 Uniform corrosion

4.2.2 Galvanic corrosion

4.2.3 Microbial corrosion

(3 × 2) (6)

4.3 Briefly describe how metals corrode. (3)

4.4 State THREE methods for protecting steel from corrosion. (3)

[15]

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QUESTION 5

5.1 Choose a description from COLUMN B that matches a type of safety equipment in COLUMN A. Write only the letter (A–E) next to the question number (5.1.1–5.1.5) in the ANSWER BOOK.

COLUMN A		COLUMN B	
5.1.1	Safety goggles	A	protect you against the fumes and vapours from the burning metal
5.1.2	Welding helmets	B	protect your feet from sharp pieces of metal
5.1.3	Leather aprons	C	protect your eyes from flying sparks
5.1.4	Safety boots	D	protect you from a high level of light, heat and radiation
5.1.5	Respirators	E	protect your body from possible burns during welding

(5 × 1) (5)

5.2 Describe THREE methods of joining metals. (3 × 3) (9)

5.3 Name FOUR types of fusion welding to join steel. (4)

5.4 Explain TWO difficulties that could be experienced when soldering aluminium. (2)

[20]

QUESTION 6

Explain the procedure to be followed when installing glass in a steel window frame. **[10]**

TOTAL: 100

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