higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATERIALS
NQF LEVEL 4

(12010484)

16 November 2023 (X-paper)
09:00–12:00

This question paper consists of 5 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
MATERIALS
NQF LEVEL 4
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: PLASTICS

1.1 List THREE advantages of using plastics in the construction industry. (3)

1.2 You are given a piece of copper wire, a piece of plastic and a gas torch.

Explain how you would carry out a test to determine whether the plastic is polyvinyl chloride (PVC) or not. (6)

1.3 Name THREE tests that can be done to distinguish between a *thermoplastic* and a *thermosetting plastic.* (3)

1.4 Name FIVE uses of a glass fibre reinforced plastic (GFRP). (5)

1.5 What are the full forms of each of the following abbreviations?

1.5.1 PA

1.5.2 PC

1.5.3 PP

(3 × 1) (3)

[20]

QUESTION 2: ELASTOMER

2.1 List FOUR materials to which acetic acid-based silicone sealants will not adhere to. (4)

2.2 Explain the procedures to follow when preparing a concrete surface that will be sealed with an elastomer. (6)

[10]

QUESTION 3: ADHESIVES

3.1 Explain the procedure to follow when joining two pieces of wood together using a wood glue. (7)

3.2 List THREE properties of PVA glue. (3)

3.3 Explain what contact adhesives are and how they are applied. (3)

3.4 State TWO uses of polyurethane wood glues. (2)

[15]

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QUESTION 4: PAINT, WATER REPELLENTS, COATINGS AND PRESERVATIVES

4.1 Explain the term *hazard classification* of treated timber as specified by the SANS 10005. (2)

4.2 Explain the meaning of the hazard classification symbol *H2* that appear on a piece of treated timber. (3)

4.3 State TWO advantages of using water-based paints over solvent-based paint. (2)

4.4 List FOUR basic components of paint. (4)

4.5 Describe the concept *synergistic effect of a duplex coating* when painting galvanized steel structures. (6)

4.6 Describe how you would demonstrate the cleanliness of steel before painting. (3)

[20]

QUESTION 5: WATERPROOFING AND DAMPPROOFING

5.1 Name THREE waterproofing products used for flat roofs in South Africa. (3)

5.2 Describe how you would apply waterproofing membranes with waterproofing paint on a flat area of a roof. (6)

5.3 Give your interpretation of the following statement:

A flat concrete roof must be constructed with a slanted ratio of 1:50. (3)

5.4 Name THREE types of water repellent that are commonly used on porous substrates. (3)

[15]

QUESTION 6: BITUMEN

6.1 Explain each of the following:

6.1.1 Tar

6.1.2 Bitumen

6.1.3 Asphalt

(3 × 2) (6)

6.2 Give FOUR properties of bitumen as a construction material. (4)

[10]

QUESTION 7: FASTENERS

7.1 Explain the term *fasteners.* (2)

7.2 State FOUR factors that must be considered when tightening a bolt correctly. (4)

7.3 Dynamic loads (such as vibration) exerted on a bolted connection will cause the nut or bolt to work loose.

List FOUR ways that you will prevent this from happening. (4)
[10]

TOTAL: 100

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