higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATERIALS
NQF LEVEL 4

(12010484)

12 November 2018 (Y-Paper)
13:00–16:00

This question paper consists of 5 pages.

NCV

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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. ALL drawings must be neat and well balanced.
5. Write neatly and legibly.

NCV

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QUESTION 1: PLASTICS

1.1 What do you understand by the term *modulus of elasticity* of plastic? (4)

1.2 Polyethylene, polypropylene and polyvinyl chloride are common plastics used in the building industry.

State TWO properties of each of the above-mentioned plastics. (6)

1.3 State the reason why polyethylene irrigation pipes are coloured black. (3)

1.4 Give THREE advantages of composite materials used in the construction industry. (3)

1.5 Working with glass fibre is a skill that is quite easy to perform.

List FOUR basic rules that need to be adhered to when working with glass fibre. (4)

[20]

QUESTION 2: ELASTOMERS

2.1 Define the term *elastomer.* (2)

2.2 Name THREE elastomers used in the construction industry. (3)

2.3 List FIVE main properties of elastomers. (5)

[10]

QUESTION 3: ADHESIVES

3.1 List THREE contact adhesives used in the building industry. (3)

3.2 Explain what is meant by *hot-melt adhesives.* (2)

3.3 Epoxy is a very strong glue that is produced by mixing a resin and a hardener which can also be very dangerous to your health.

State 5 general precautions you need to take when working with epoxies. (5)

3.4 State the common name of cyanoacrylate adhesive and indicate its limitations and weaknesses. (5)

[15]

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QUESTION 4: PAINTS, WATER REPELLENTS, COATINGS AND PRESERVATIVES

4.1 State SIX uses of extenders in paint. (6)

4.2 South African National Standard (SANS) 100005 stipulates different hazard classes of timber. Copy and complete the table below in the ANSWER BOOK by filling in the missing spaces.

HAZARD CLASS SYMBOL	DESCRIPTION OF HAZARD CLASS
H1	
H2	
H3	
H4	
H5	
H6	

(6)

4.3 Solvent- based paints are harmful to the environment, human and animal life.

Name THREE illnesses that solvent-based paints can cause to humans. (3)

4.4 You have been given a beautiful steel table that has been galvanised and needed to be prepared for painting. You have chosen to protect your table by using a duplex coating system.

List FIVE contaminants that you will need to remove during the surface preparation. (5)

[20]

QUESTION 5: WATERPROOFING OF BUILDINGS, DAMP-PROOFING AND VAPOUR BARRIER INSTALLATION

5.1 The sun can be very damaging to flat roofs in South Africa because of our climatic conditions.

Explain how we can minimise the damage caused by the sun. (2)

5.2 Water repellents are used in the construction industry and are applied to concrete and masonry.

Indicate THREE types that are used in South Africa. (3)

5.3 List FIVE factors which the artisan has to bear in mind to ensure that waterproofing does the job it is required to do, which is, to keep moisture out of the structure.

(5 × 2) (10)

[15]

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QUESTION 6: BITUMEN, TAR AND ASPHALT

6.1 Explain the difference between *gap-graded asphalt and continuously graded asphalt.* (2 × 2) (4)

6.2 Name FOUR health hazards of tar. (4)

6.3 Define *viscosity* of a liquid. (2)
[10]

QUESTION 7: FASTENERS

7.1 Various nails are used on a construction site.

Give ONE function of each of the following:

7.1.1 Wire nails

7.1.2 Panel nails

7.1.3 Box nails

7.1.4 Oval nails

(4 × 1) (4)

7.2 Calculate the nominal tensile and the nominal yield strength of a bolt with the number 5,8 stamped on the head of the bolt. (2 × 3) (6)
[10]

TOTAL: 100

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