higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MATERIALS
NQF LEVEL 3

(12010273)

2 March 2018 (X-Paper)
09:00–12:00

This question paper consists of 5 pages.

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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. Write neatly and legibly.

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QUESTION 1

1.1 State SIX main disadvantages of using timber as construction materials. (6)

1.2 Give TWO examples of defects that may be classified as natural in timber. (2)

1.3 What is the term used to describe the method of removing moisture from the wood? (2)

1.4 Distinguish between *distortion* and *natural defects.* (4)

1.5 Define the term *felling.* (1)

[15]

QUESTION 2

2.1 Explain the method of flame cutting on metals. (3)

2.2 There are various methods of cutting metal.

Give FIVE advantages of flame cutting. (5)

2.3 List FIVE main constituents of alloys commonly used in the construction industry. (5)

2.4 Why it is important to consider coefficient of thermal expansion when designing a steel structure? (4)

2.5 Name THREE methods of cutting metals. (3)

[20]

QUESTION 3

3.1 Draw a simple sketch to show an example of vertical bracing in steel. (5)

3.2 Explain the relationship between stress and strain in steel. (4)

3.3 You are required to do a final inspection on a steel structure that has just been built.

As an inspector, which items will you examine? (4)

3.4 Between mild steel and high-tensile steel, which one do you think is best when choosing steel as a material? (5)

3.5 What is the use of HD bolts in steel construction? (2)

[20]

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QUESTION 4

4.1 Choose an item from COLUMN B that matches a word in COLUMN A. Write only the letter (A–J) next to question number (4.1.1–4.1.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
4.1.1	Deterioration	A	the transfer of one or more electrons to a molecular entity
4.1.2	Oxidation	B	something that is given up as a means of gaining something more desirable
4.1.3	Electrolyte	C	the part of the cell that corrodes
4.1.4	Anode	D	any liquid that conducts electricity and in contact with both anode and cathode
4.1.5	Cathode	E	a measure of the acidity or alkalinity of a solution
4.1.6	Potential of hydrogen	F	the part of the cell that does not corrode
4.1.7	Noble metal	G	the breaking down of compound
4.1.8	Impermeable	H	reaction where a substance loses electrons consequently
4.1.9	Reduction	I	metal that is resistant to corrosion
4.1.10	Sacrificial	J	material that does not allow gas/liquid to pass through

(10 × 1) (10)

4.2 Briefly explain how sea salt is related to corrosion. (2)

4.3 Explain the method of protecting steel from corrosion through electroplating. (3)

[15]

QUESTION 5

5.1 Distinguish between *soldering* and *brazing.* (2 × 2) (4)

5.2 Why it is important to work in a well-ventilated area when executing welding works? (2)

5.3 Explain the role of the following safety gear in welding.

5.3.1 Safety goggles

5.3.2 Welding helmet

5.3.3 Leather apron

5.3.4 Heat-resistant cotton clothing

(4 × 1) (4)

5.4 Draw the sketch showing the application of filler as third material when joining two metals together. (6)

5.5 How would you protect yourself from the risk of an electric shock during welding? (3)

5.6 Give the melting point of soft solder. (1)

[20]

QUESTION 6

6.1 Glasses are mostly mounted on the walls in the bathrooms or bedrooms to be used as mirrors.

Which steps will you follow to drill holes on the glass so that you can use screws to mount the glass on a wall? (9)

6.2 Give ONE example of where a float glass may be used. (1)

[10]

TOTAL: 100

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