higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ENGINEERING FABRICATION

(First paper)

NQF LEVEL 2

(6031002)

17 November 2022 (Y-paper)
13:00–15:00

Calculators may be used.

This question paper consists of 7 pages.

469Q1N2217

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TIME: 2 HOURS
MARKS: 75

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. Start each section on a new page.
5. Use only a black or blue pen.
6. Write neatly and legibly.

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SECTION A

QUESTION 1

Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–J) next to the question number (1.1–1.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
1.1	Oxyacetylene	A	a hand-held file disc grinder
1.2	Thickness of the metal	B	hammer lock
1.3	Burr-removal is managed by using …	C	reduces high cylinder pressure
1.4	Bevel gauges	D	also known as a universal beam
1.5	Rolled steel joist	E	results in blade fatigue
1.6	Radial line development	F	affects the job outcome
1.7	Grooved seam	G	a line
1.8	Gas regulator	H	developing pyramids and cones
1.9	Excessive tension on the blade	I	gas mixture of acetylene and oxygen
1.10	Measurement of a length	J	are used for marking off angles, bevels and mitres on pipes

(10 × 1) **[10]**

TOTAL SECTION A: 10

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SECTION B

QUESTION 2

2.1 Give FOUR advantages of using a template. (4)

2. 2 In a manufacturing environment, templates must be extremely durable.

Give FOUR reasons why templates should be long-lasting in the manufacturing industry. (4)

2. 3 You are given a diameter of 408 mm and a tolerance of ±2 mm.

2.3.1 Calculate the new diameter when a negative tolerance is used.

2.3.2 Calculate the new diameter when a positive tolerance is used.

(2 × 2) (4)
[12]

QUESTION 3

3.1 State THREE rules about safety that exist in the workplace. (3)

3.2 The use of a chalk line in engineering fabrication is vital.

Explain how you have used the chalk line in the workshop during practical periods. (3)

3.3 Name THREE methods of joining you would use on a wrap-around three-piece box made of 0,8 mm mild steel plate. (3)

3.4 Fabrication tolerances are the tolerances that are required for a particular set of job specifications. Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–B) next to the question number (3.4.1–3.4.3) in the ANSWER BOOK.

3.4.1 In fabrication, all measurements must be within … of the required sizes.

A ±15 mm
B 1,5 mm

3.4.2 The centre line must be within … of the centre.

A ±1,0 mm
B 150 mm

3.4.3 The chalk line must not be wider than …

A ±50 mm.
B 0,5 mm.

(3 × 1) (3)
[12]

QUESTION 4

4.1 Cutting, forming and shaping are commonly done manually using a variety of tools and equipment.

Which tool would you use to perform the following functions:

4.1.1 To cut circular and straight work

4.1.2 To notch corners and edges inside blanks

(2 × 1) (2)

4.2 Elasticity, ductility, and malleability play a major role in the rolling up of cylinders.

Briefly explain the following terms:

4.2.1 Elasticity

4.2.2 Malleability

4.2.3 Ductility

(3 × 1) (3)

4.3 Before planning a given task, make sure you obtain all the necessary documentation you need to carry out the task.

List at least FOUR documents you need to obtain before planning the task. (4)

4.4 Name TWO types of forming machines commonly used in a sheet metal workshop. (2)

4.5 A handy seam is similar to a grooved seam, but it does not need a grooving tool.

4.5.1 Give ONE advantage of using a handy seam.

4.5.2 Give ONE reason why it may be necessary to use a handy seam.

(2 × 1) (2)

[13]

QUESTION 5

5.1 FIGURE 1 shows oxyacetylene gas plant. Name any THREE parts of the oxyacetylene plant below. Write only the name of the part next to the letter (A–E) in the ANSWER BOOK. (3)

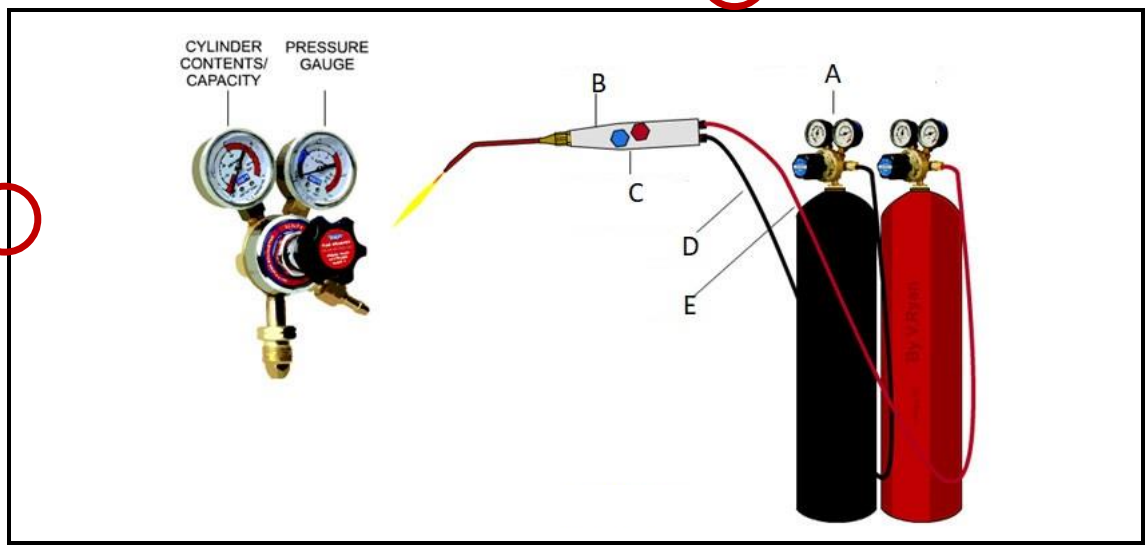

FIGURE 1

5.2 State THREE safety precautions you must take before starting any job using oxyacetylene gas plant. (3)

5.3 Full dismantling of the oxyacetylene equipment does not take place after every task.

State THREE occasions when you are compelled to dismantle oxyacetylene equipment. (3)

5.4 Hoses are very sensitive to work with.

State FOUR safety precautionary measures to observe when using and storing hoses. (4)
[13]

QUESTION 6

6.1 A reciprocating power saw is one of the three types of metal-cutting power saw.

Briefly explain the operation of a reciprocating power saw. (2)

6.2 List FOUR tools or pieces of equipment used to remove rough edges or burs. (4)

6.3 State THREE points to note when identifying potential hazards that may render the operations at a workplace unsafe. (3)

6.4 Give THREE advantages of using coolant when cutting steel with a blade. (3)

6.5 Clamping materials incorrectly on the power saw can cause injuries.

Give THREE pieces of advice to your peer on how to clamp the material on the power saw before cutting commences. (3)
[15]

TOTAL SECTION B: 65
GRAND TOTAL: 75

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