higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

WELDING
NQF LEVEL 2

(6031012)

12 March 2018 (X-Paper)
09:00–12:00

This question paper consists of 6 pages.

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TIME: 3 HOURS
MARKS: 150

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 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (1.1.1–1.1.5) in the ANSWER BOOK.

1.1.1 Fillet weld face is the surface of the weld.

1.1.2 Electric shock is a state of shock caused by direct or indirect electrical contact.

1.1.3 True arc voltage is the voltage value during the start time interval.

1.1.4 Copper is a ferrous metal.

1.1.5 Auto darkening welding helmet is ideal for arc and MIG welding.

(5 × 1) (5)

1.2 Complete the following sentences by using the word or words in the list below. Write only the word next to the question number (1.2.1–1.2.5) in the ANSWER BOOK.

scratching; melting; joining; heating; base

Welding is a process of (1.2.1 …) metals together by (1.2.2 …) them to their (1.2.3 …) temperature and causing the molten metal to flow together. The arc is struck by (1.2.4 …) or tapping the electrode against the (1.2.5 …) metal. (5)

[10]

QUESTION 2

2.1 State ONE purpose of the following components used in shielded metal arc welding:

2.1.1 Electrode

2.1.2 Earth clamp

2.1.3 Welding machine

2.1.4 Chipping hammer

2.1.5 Steel brush

(5 × 2) (10)

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2.2 All electrodes have different codes to meet the ISO standards. State the type of electrode with the codes listed below.

2.2.1 E7018

2.2.2 E7024

2.2.3 E6013

2.2.4 E316L

(4 × 1) (4)

2.3 List THREE main methods of creating welds. (3)

2.4 Make a neatly labelled sketch of an unequal weld on a fillet joint. (3)

2.5 List FIVE methods of how to dispose of waste after completing the shielded metal arc welding. (5)
[25]

QUESTION 3

3.1 There are THREE types of gas cylinders used in oxy-acetylene equipment which are as follows:

A Oxygen
B Acetylene
C Liquid petroleum gas

3.1.1 State the colour of each cylinder (A–C). (3)

3.1.2 Which of the above cylinders (A, B, C) has a right-hand thread on the valve? (1)

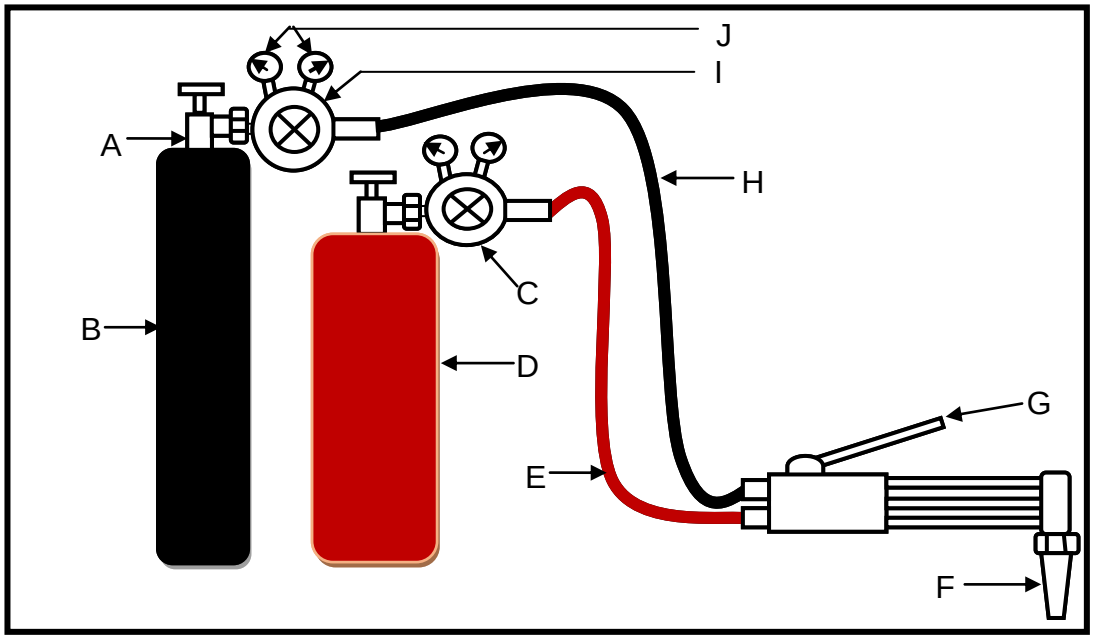
3.1.3 Motivate your answer to QUESTION 3.1.2. (1)

3.2 List FIVE causes of back-firing while gas welding. (5)
[10]

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QUESTION 4

4.1 The FIGURE below shows an oxy-acetylene cutting equipment. Write the name of each component next to the letter (A–J) in the ANSWER BOOK.



(10)

4.2 Explain the steps that must be followed when cutting a work piece with the oxy-acetylene equipment. (8)

4.3 List THREE safe conditions that must be available when using the oxy-acetylene cutting equipment in a confined space. (3)

4.4 Explain how you would test the oxy-acetylene cutting equipment for any leaks. (2)

4.5 State TWO disadvantages of the oxy-acetylene process. (2)

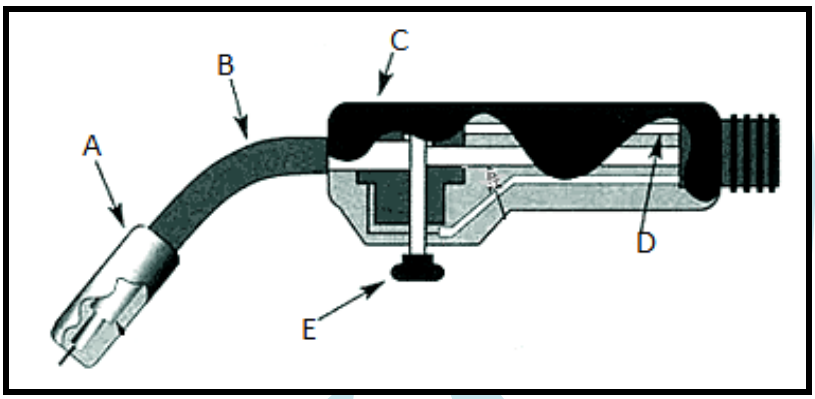
[25]

QUESTION 5

5.1 List FIVE disadvantages of gas metal arc welding. (5)

5.2 State the FOUR ways in which gas metal arc welding transfers the metal from the electrode to the parent metal. (4)

5.3 The FIGURE below shows a gas metal arc welding gun. Write the name of each component next to the letter (A–E) in the ANSWER BOOK.



(5)

5.4 Illustrate by means of a neat sketch the following welding joints used in GMAW:

5.4.1 Butt joint

5.4.2 Fillet joint or T-joint

5.4.3 Angle joint

(3 × 2) (6)
[20]

QUESTION 6

State the purpose of the following tests of the work piece that has been gas brazed:

6.1 Tension test

6.2 Guided-bend test

6.3 Fillet-weld test

6.4 Notch-toughness test

6.5 Stud-weld test

(5 × 2) **[10]**

TOTAL: 100

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