higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

WELDING
NQF LEVEL 4

(6031034)

12 March 2018 (Y-Paper)
13:00–16:00

This question paper consists of 6 pages.

NCV

Copyright reserved

TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

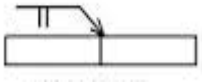
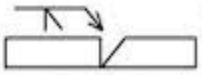
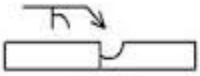
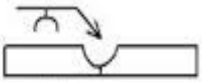
1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Start each question on a new page.
5. Write neatly and legibly.

NCCA

Copyright reserved

QUESTION 1

1.1 Choose a term from COLUMN B that matches a picture in COLUMN A. Write only the letter (A–I) next to the question number (1.1.1–1.1.6) in the ANSWER BOOK.

COLUMN A		COLUMN B
1.1.1		A tee-piece
		B single-U-groove
		C bevel groove
1.1.2		D J-groove
		E cross joint
1.1.3		F square groove
		G socket
1.1.4		H single-V-groove
		I double V-groove
1.1.5		
1.1.6		

(6 × 1) (6)

1.2 Give FOUR disadvantages of joining pipes using welding methods. (4)
[10]

QUESTION 2

2.1 Make a neat, labelled sketch of the basic equipment making up the shielded metal arc welding (SMAW) system. (6)

2.2 List SIX functions of the flux coating on an electrode. (6)

2.3 Shielded metal arc welding (SMAW) is the most common method used to weld pipes together.

Explain the shielded metal arc welding (SMAW) process. (5)

Copyright reserved

2.4 FIGURE 1 shows FOUR welding positions used for the welding of pipes. Name the positions marked A–D. Write only the answer next to the letter (A–D) in the ANSWER BOOK.

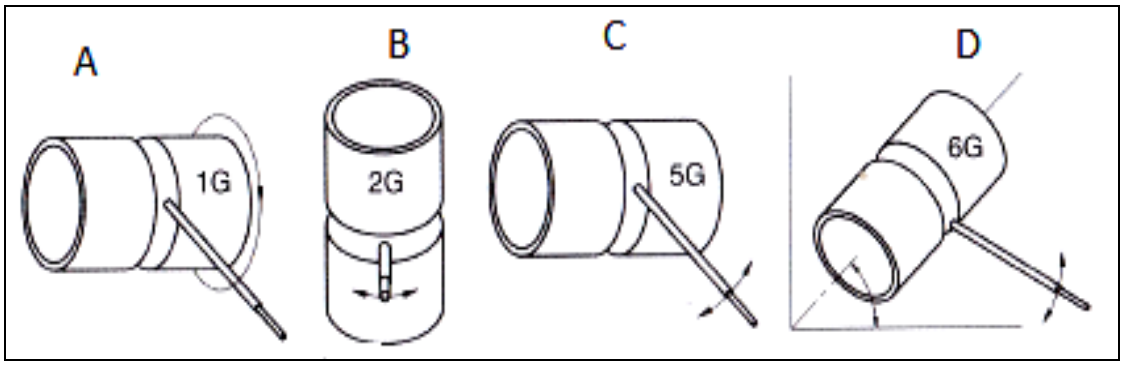


FIGURE 1

(4 × 2) (8)
[25]

QUESTION 3

3.1 Mechanical and chemical methods are used to clean pipes before welding.

Name FIVE chemical cleaning methods. (5)

3.2 FIGURE 2 shows gas tungsten arc/tungsten inert-gas (TIG) welding equipment. Label the items marked A–F. Write only the answer next to the letter (A–F) in the ANSWER BOOK.

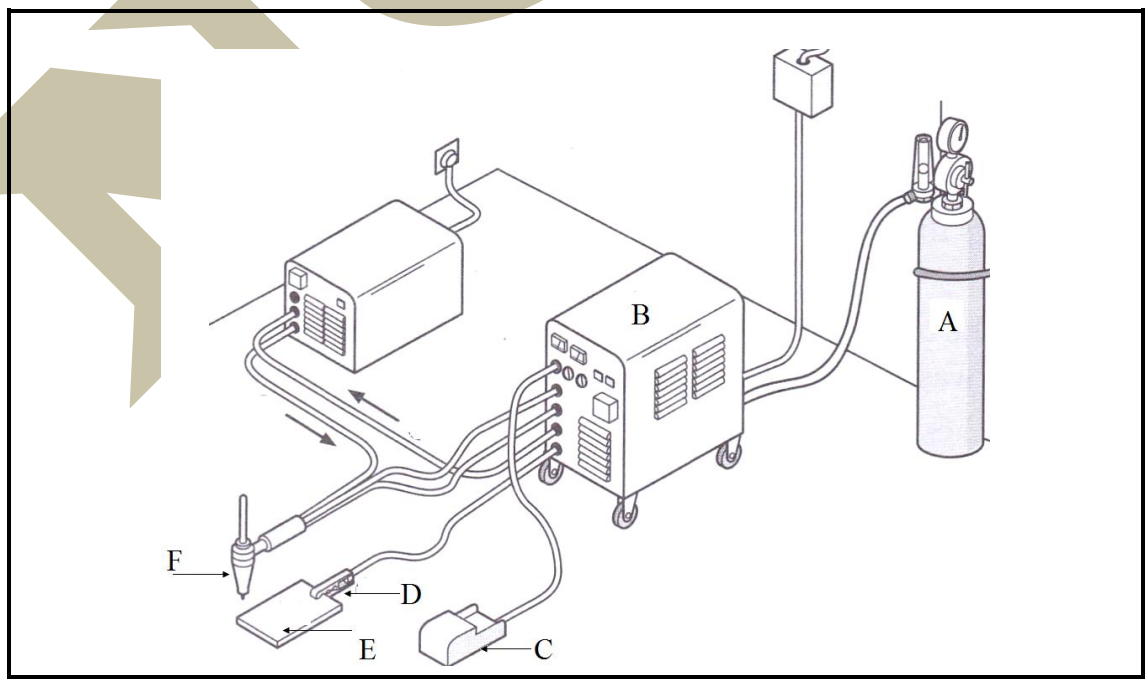


FIGURE 2 (6)

3.3 Give SIX disadvantages of tungsten inert-gas (TIG) welding. (6)

3.4 Name the TWO types of electrodes used for gas tungsten arc welding (GTAW). (2)

3.5 Name SIX consumables used for tungsten inert-gas (TIG) welding. (6)
[25]

QUESTION 4

4.1 State SIX factors to be considered when transporting or moving gas cylinders. (6)

4.2 The following paragraph covers fumes and gases formed during gas tungsten arc welding. Complete the following paragraph by using the words in the list below. Write only the missing word or words next to the question number (4.2.1–4.2.10) in the ANSWER BOOK.

chains; secure; pressure; ventilated; arc; explode; ozone; off; securely; heat

The brightness of the (4.2.1) … in gas tungsten arc welding can break down the air around it and cause (4.2.2) … to form. Gases and fumes are harmful, so it is important to work in a well (4.2.3) … area. Ensure that the compressed gas supply is turned (4.2.4) … when not in use. Make sure the gas cylinders are fastened (4.2.5) … when stored. (4.2.6) … can be used to (4.2.7) … the cylinders. Keep cylinders away from excess (4.2.8) … as this will result in a (4.2.9) … build-up and can cause the cylinder to (4.2.10) … (10)

4.3 Name FOUR ferrous metals that can be welded using gas tungsten arc welding. (4)

4.4 List FIVE components in the metal inert-gas (MIG) welding unit. (5)
[25]

Copyright reserved

QUESTION 5

5.1 Draw the table below in the ANSWER BOOK and complete it by listing FIVE advantages and FIVE disadvantages of metal inert-gas (MIG) welding.

ADVANTAGES		DISADVANTAGES	
1		**1**	
2		**2**	
3		**3**	
4		**4**	
5		**5**	

(10)

5.2 FIGURE 3 shows the metal inert-gas welding process. Label the items marked A–E. Write only the answer next to the letter (A–E) in the ANSWER BOOK.

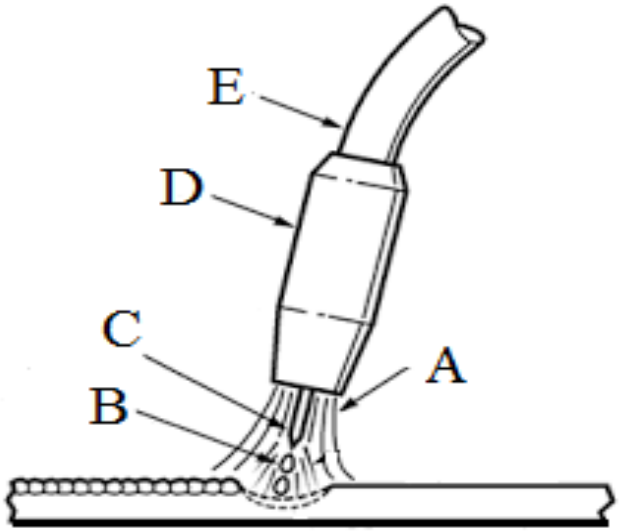


FIGURE 3

(5)
[15]

TOTAL: 100

Copyright reserved