



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

**MANUAL MANUFACTURING
NQF LEVEL 2**

(6030092)

**24 November 2023 (Y-paper)
13:00–16:00**

This question paper consists of 6 pages and an addendum.

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA
NATIONAL CERTIFICATE (VOCATIONAL)
MANUAL MANUFACTURING
NQF LEVEL 2
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 section on a new page.
 5. Use only a black or blue pen.
 6. Write neatly and legibly.
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QUESTION 1

- 1.1 Define the word *safety*. ★ (1)
- 1.2 List THREE health hazards. (3)
- 1.3 In your own words, differentiate between *occupational health* and *occupational safety* at work. (2)
- 1.4 While you, as a mechatronics technician, were busy in the workshop, one of your plastic-handle Philips screwdrivers fell from the workbench. Its tip was damaged.

Use ADDENDUM A to complete a faulty-tool report. Insert it in your ANSWER BOOK. ★ (6)
- 1.5 Electrical energy is essential for most companies' day-to-day operation.

What are the THREE things that companies can do to conserve energy? (3)
- 1.6 A hazard is anything in the workplace that can cause damage to property or injury to people.

State TWO potential hazards in an unsafe workshop. (2)
- [17]**

QUESTION 2

- 2.1 Explain the following terms:
- 2.1.1 *Bisect*
- 2.1.2 *Fabrication* ★
- 2.1.3 *Isometric* (3 × 1) (3)
- 2.2 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (2.2.1–2.2.2) in your ANSWER BOOK.
- 2.2.1 Line types in an engineering drawing vary in thickness and may be either solid or broken.
- 2.2.2 A freehand drawing explains concepts that are difficult to describe in words. ★ (2 × 1) (2)
- 2.3 Name FIVE drawing instruments used in Engineering drawing. (5)
- [10]**

QUESTION 3

- 3.1 Name the parts of the tool shown in FIGURE 1 below by writing only the answer next to the numbers (3.1.1–3.1.8) in your ANSWER BOOK.

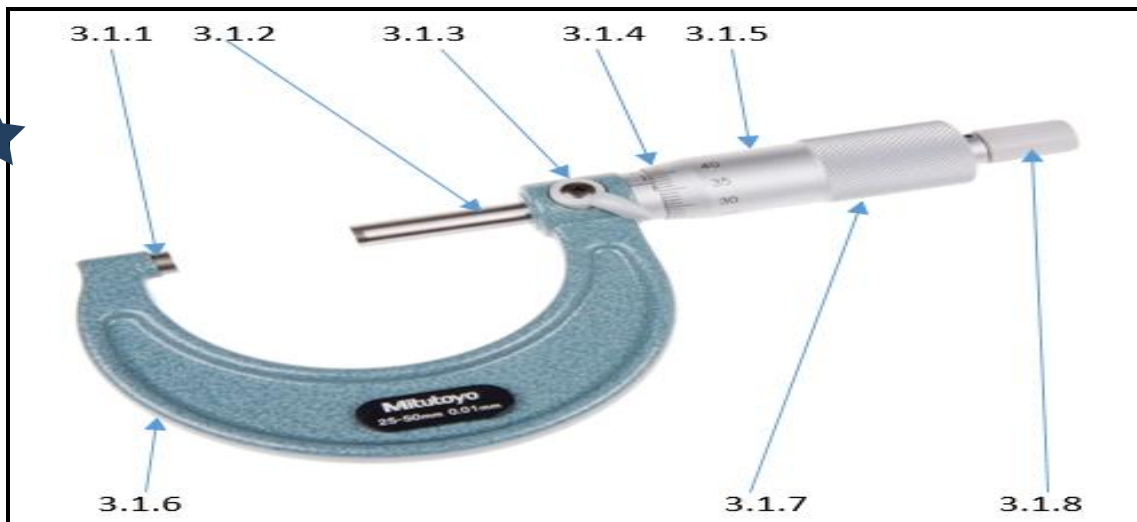


FIGURE 1

(8 × 1) (8)

- 3.2 What is the name of the instrument in QUESTION 3.1? (1)
- 3.3 Explain how an engineering square is used to check that surfaces are square to each other. (3)
- 3.4 State FOUR types of chisels. (4)
- 3.5 Identify the following types of pliers and state their use:

3.5.1



3.5.2



3.5.3



3.5.4



(4 × 2) (8)

[24]

QUESTION 4

4.1 Briefly explain the following in relation to soldering and welding:

4.1.1 Alternating current (AC) ★

4.1.2 Electrode

(2 × 2)

(4)

4.2 Name the main parts that make up the soldering iron system shown in FIGURE 2 below by writing only the answer next to the question number (4.2.1–4.2.7) in your ANSWER BOOK.

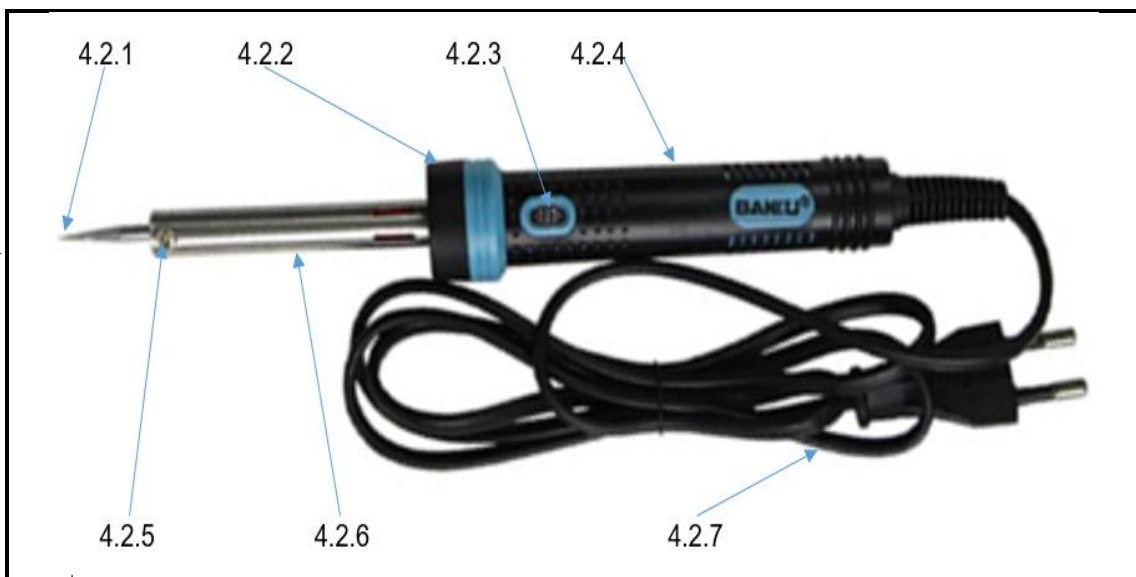


FIGURE 2

(7 × 1)

(7)

4.3 Soldering is a relatively safe method of joining metals.

List FIVE safety considerations when soldering is done.

(5)

4.4 Tinning involves coating components or wires with solder before a joint is made.

State THREE steps you will follow to tin the tip of a soldering iron. ★

(3 × 2)

(6)

4.5 Briefly explain the arc welding process.

(7)

[29]

QUESTION 5

- 5.1 Good housekeeping helps to avoid injuries. 
 Explain at least FIVE benefits of good housekeeping. (5)
- 5.2 Safety signs and colours are very important in any workshop.
 Give FIVE reasons why they are important. (5)
- 5.3 Explain the following documents containing information to develop a project plan sheet:
- 5.3.1 Bill of material (BOM)
- 5.3.2 Procedure plan (2 × 2) (4)
- 5.4 Give TWO uses of each of the following non-ferrous metals:
- 5.4.1 Aluminium
- 5.4.2 Copper
- 5.4.3 Zinc  (3 × 2) (6)
- [20]**
- TOTAL: 100**

ADDENDUM

EXAMINATION NUMBER:

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COMPANY NAME: CORONA MECHATRONICS				
FAULTY-TOOL REPORT				
TOOL NAME				
DESCRIPTION				
ITEM NUMBER		DATE		
FAULT DESCRIPTION				
PERSON REPORTING				
FOR OFFICE USE ONLY				
STOCK NUMBER				
REPAIR OF TOOL				
COMPANY DOING REPAIRS	DATE SENT	DATE RETURN	COST OF REPAIR	SIGNATURE