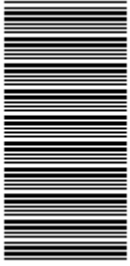


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**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

**MANUAL MANUFACTURING
NQF LEVEL 2**

NOVEMBER EXAMINATION

(6030092)

**19 November 2014 (X-Paper)
09:00–12:00**

This question paper consists of 9 pages and 1 addendum.

**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.
-

SECTION A**QUESTION 1**

- 1.1 Explain why safety is so important? (3)
- 1.2 Name THREE safety hazards and THREE health hazards. (6)
- 1.3 Name the THREE elements a fire consists of. (3)
- 1.4 Explain the purpose of the Occupational Health and Safety Act. (3)
- 1.5 Explain the purpose and reason for engineering drawings. (5)
- 1.6 List FIVE types of drawings used in engineering drawings. (5)
- 1.7 Explain the purpose of measuring and marking tools. (3)
- 1.8 List FIVE general rules when using measuring equipment. (5)
- 1.9 List FIVE possible accidents typical to poor housekeeping. (5)
- 1.10 Describe the value and purpose of symbolic signs. (2)
- 1.11 Give FIVE examples of symbolic signs used in the workplace. (5)
- 1.12 What is the purpose of pedestal drilling machine? (2)
- 1.13 State the function of the following files:
Square files
Triangular files
Half round files (3)
- [50]**

QUESTION 2

- 2.1 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (2.1.1–2.1.10) in the ANSWER BOOK.
- 2.1.1 The ON button on the machine is normally green and the OFF button is normally red.
- 2.1.2 The acronym NOSA stands for National Occupational Safety Association.
- 2.1.3 Machine guarding is not important on rotating machinery.
- 2.1.4 One cannot be electrocuted when working with water and electricity simultaneously.
- 2.1.5 One of the potential hazards in the workshop is a wet floor.
- 2.1.6 It is safe to work on pedestal drill wearing loose clothing.
- 2.1.7 It is important to report any damaged equipment or tools while working.
- 2.1.8 In the interests of your own safety, always wear surgical gloves when dealing with a bleeding injury.
- 2.1.9 The purpose of the Occupational Health and Safety Act is not to promote the health and safety of all workers.
- 2.1.10 Moving machine parts have the potential for causing severe workplace injuries. (10 x 1) (10)
- 2.2 Explain why workers are wearing safety boots. (1)
- 2.3 Give TWO characteristics of good safety boots. (2)
- 2.4 State TWO other hazard prevention methods. (2)
- [15]**

QUESTION 3

3.1 You are required to bisect a 40 degree angle.

Discuss, with drawings, each step that you would follow to bisect the angle. (9)

3.2. What is the compass used for in-drawing? (1)

[10]

TOTAL SECTION A: 75

SECTION B**QUESTION 4**

4.1 List and explain the characteristics if the THREE materials are used in the manufacturing of hacksaw blades. (6)

4.2 Name a grinding wheel's THREE main components. (3)

4.3 Name THREE of a vernier calliper various uses. (3)

4.4 Hammers are classified according to shape and weight. You as a mechatronics technician and working in a different situation, specify which hammer you will use to work on following scenarios:

4.4.1 Where there are narrow gaps or pattern work is required

4.4.2 When riveting

4.4.3 When removing panel pins (3 x 1) (3)

4.5 When making screw threads different terminologies are used.

Choose a description from COLUMN B that matches a word(s) in COLUMN A. Write ONLY the letter (A–G) next to the question number (4.5.1–4.5.6) in the ANSWER BOOK.

COLOMN A		COLOMN B	
4.5.1	Nominal diameter	A	angle formed by the flanks of a thread
4.5.2	Root diameter	B	the distance from point on a screw thread to corresponding point on the next thread
4.5.3	Pitch	C	the largest diameter of the thread or nut
4.5.4	Flank	D	the distance between the crest and the root of the thread
4.5.5	Included angle	E	the smallest diameter of the thread or nut.
4.5.6	Depth	F	the slanting faces of the screw thread
		G	the angle made by the helix of the thread at the pitch diameter

(6 x 1)

(6)

4.6 Different measuring instruments have different accuracies.

What is the accuracy of a micro meter?

(1)

4.7 Label the parts of the pillar drill (1–8) shown in FIGURE 1 below. Write only the name next to the numbers (1–8) in the ANSWER BOOK.

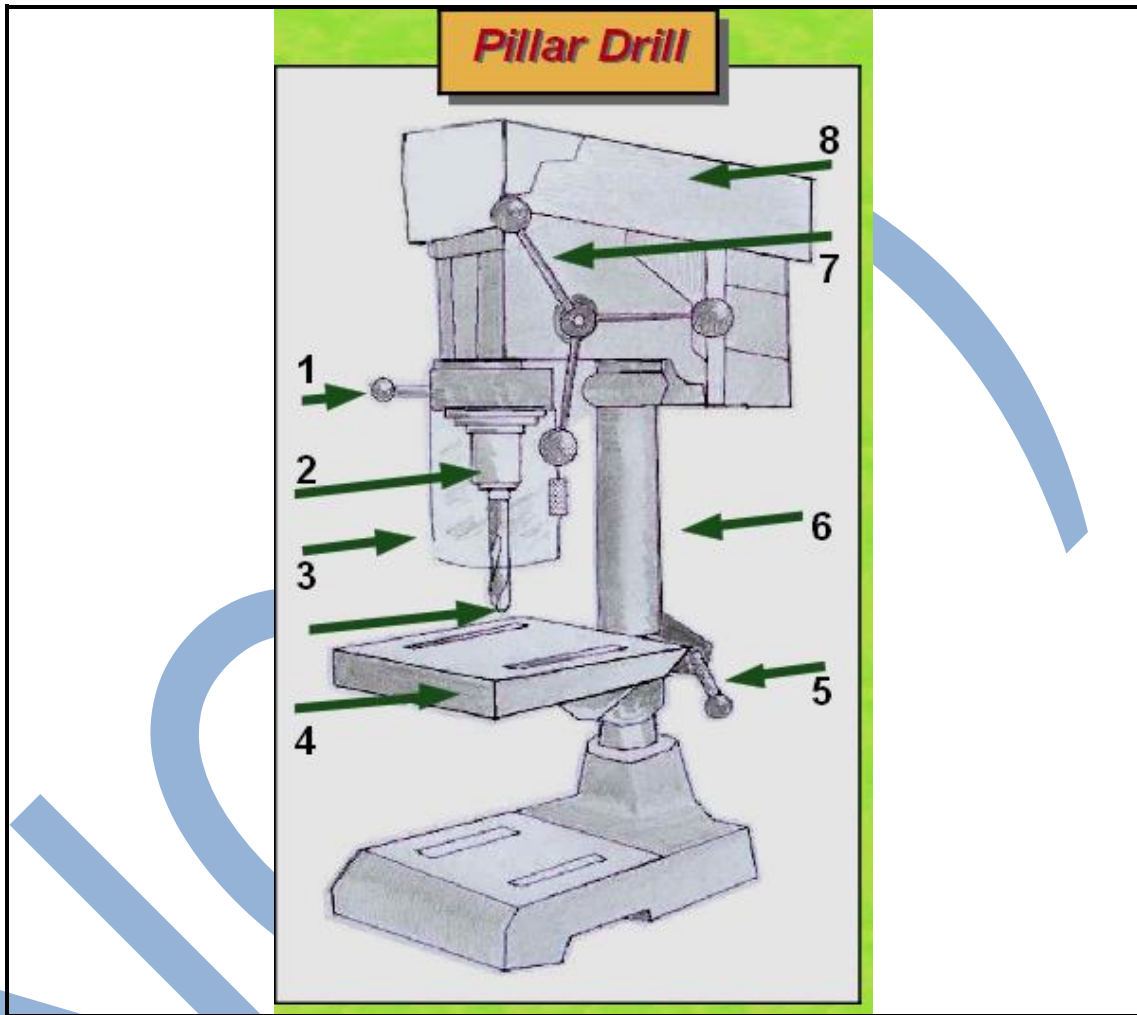


FIGURE 1

(8)
[30]

QUESTION 5

- 5.1 You are required to perform gas-welding.
List FIVE safety rules that must be considered when working in a welding bay. (5)
- 5.2 Soldering is performed for different applications.
Name any THREE of these applications. (3)
- 5.3 Explain the term *tinning* when soldering. (2)
- 5.4 Explain how you will go about to tin the tip of soldering. (5)
- 5.5 List THREE safety precautions to consider when soldering. (3)

5.6 Identify the system in FIGURE 2 below and label all the components (1–7). Write only the name next to the numbers (1–7) in the ANSWER BOOK. (7)

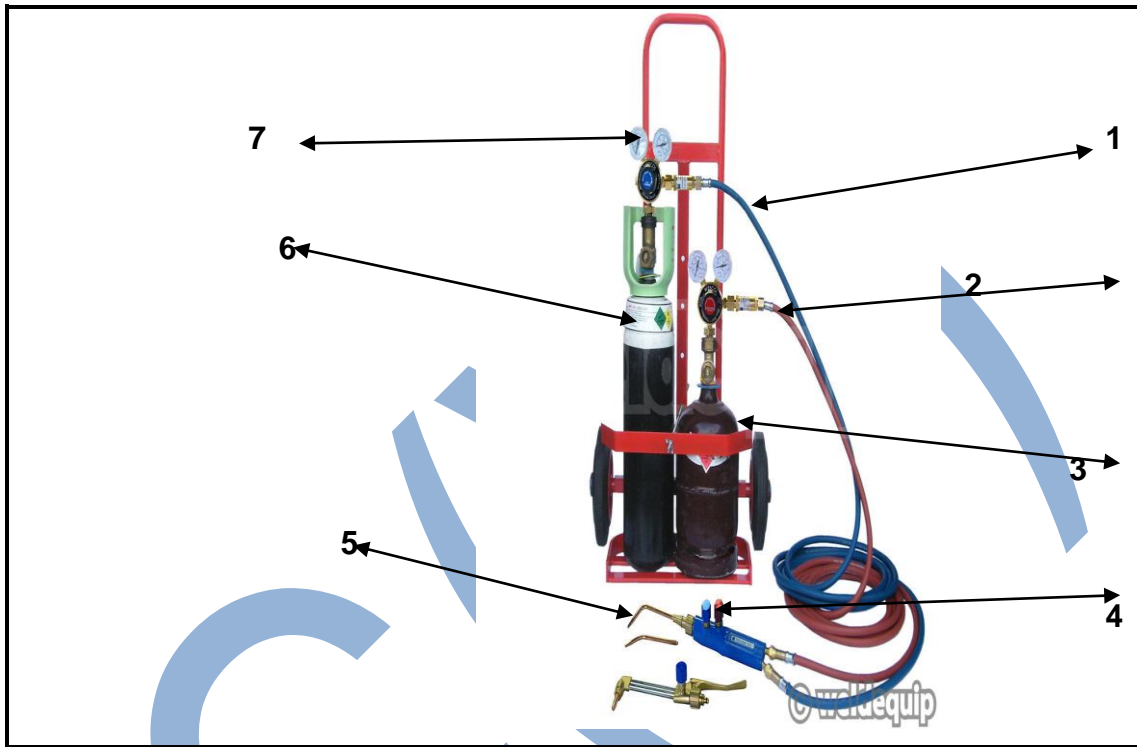


FIGURE 2

[25]

QUESTION 6

6.1 You are required to manufacture the part shown in FIGURE 3 below. Complete the work plan in ADDENDUM A and submit it with your ANSWER BOOK.

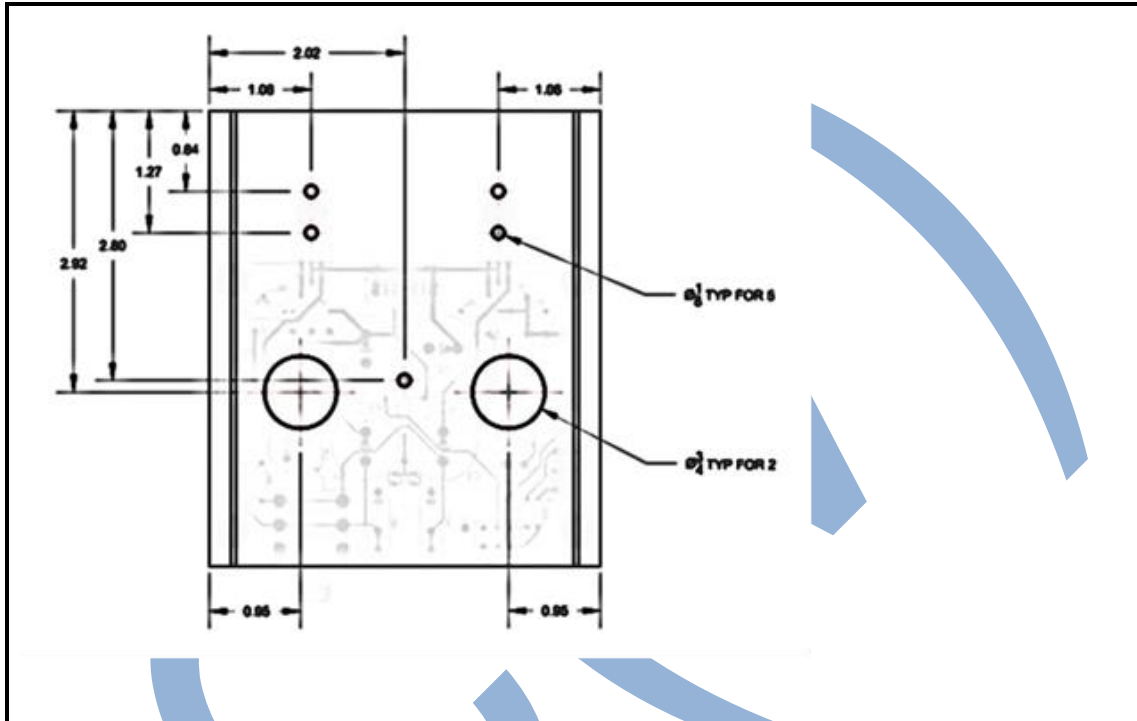


FIGURE 3

(10)

6.2 You are working in the workshop and you noticed lots of things which are not right.

Give your own comment on what you will do in the following situations:

6.2.1 Pipe leaking.

6.2.2 Goods packed in front of the emergency exit.

6.2.3 You are about to use a tool and realised its damaged.

6.2.4 A supervisor asks you to clean oil on the floor which was not spilt by you.

6.2.5 You are given a task and you are not sure how to do it. (3 x 1) (5)

6.3 Safety signs are made of THREE basic geometric shapes.

List these shapes (3)

6.4 State TWO uses of nylon (2)

[20]

TOTAL SECTION B: 75
GRAND TOTAL: 150

ADDENDUM A

WORK PLAN					
Name:					
Name of task:					
Start Date:		End Date			
Bill of materials					
Part Name:	No	Material:	Size:	Unit Cost:	Total Cost:
Procedural plan					
<i>List all the operations to be performed in the correct sequence and list the tools and equipment needed to complete the task according to the plan</i>					
Item	operations		Tools and equipment		