higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ENGINEERING TECHNOLOGY
NQF LEVEL 2

(6021012)

12 November 2024 (Y-paper)
13:00–16:00

REQUIREMENTS: A4 drawing sheet

This question paper consists of 9 pages and 1 diagram sheet.

063Q1N2412

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
ENGINEERING TECHNOLOGY
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. All sketches must be neat, clear and in proportion.
5. Drawings must be done on a clean A4 drawing sheet provided.
6. Use only a black or blue pen.
7. Write neatly and legibly.

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QUESTION 1

1.1 Various options are given as possible answers to the following questions. Choose the correct answer and write only the letter (A–D) next to the question number (1.1.1–1.1.8) in the ANSWER BOOK.

1.1.1 The purpose of a … is to install or remove circlips from a housing or a shaft.

A long nose plier
B circlip plier
C combination plier
D side cutter

1.1.2 The most appropriate tool to be used for soft tapping, without damaging a work piece.

A Ball peen hammer
B Sledge hammer
C Rubber mallet
D Centre punch

1.1.3 The most common methods used for filing.

A Cross and draw filing
B Flat and round file type
C Datum and data
D File brush and bench vice

1.1.4 A tool used to tighten bolts and nuts to a correct tightness according to manufacture specifications.

A Bench vice
B Torque wrench
C Spanner
D Trammel

1.1.5 A type of chisel used for cutting oil grooves in slides and white metal bearings.

A Flat
B Cross cut
C Round nose
D Diamond point

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1.1.6 A type of screw driver used when the swinging space for a screwdriver is limited.

A Offset screwdriver
B Philips long blade type
C Eccentric screwdriver
D Pozidriv type

1.1.7 A tool used to mark-off metal.

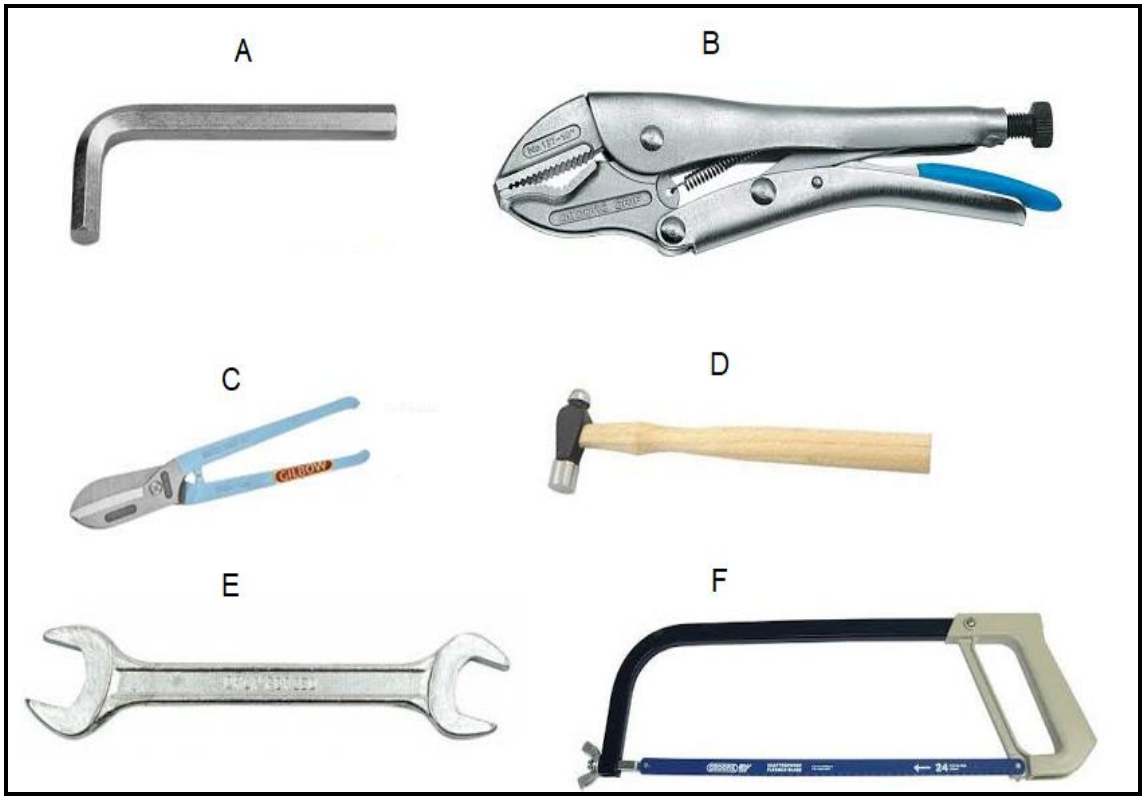
A Scriber
B D.T.I.
C Shank
D Calliper

1.1.8 ... is a reason for hacksaw blade failure.

A Release pressure on the return stroke
B Holding hacksaw frame firmly
C Blade tension set too tight
D Use entire length of the blade during cutting strokes

(8 × 1) (8)

1.2 The FIGURE below shows different hand tools. Name each hand tool by writing the answer next to the letter (A−F) in the ANSWER BOOK and providing ONE function of each tool.



(6 × 2) (12)
[20]

QUESTION 2

2.1 Power tools are used in the manufacturing, engineering and technology fields.

Draw a table where you name TWO pneumatic power tools and give ONE function of each tool.

HINT: Redraw and complete the table below in the ANSWER BOOK.

PNEUMATIC POWER TOOL	FUNCTION
1)	
2)	

(2 × 2) (4)

2.2 FIGURE 1 shows a task being performed.

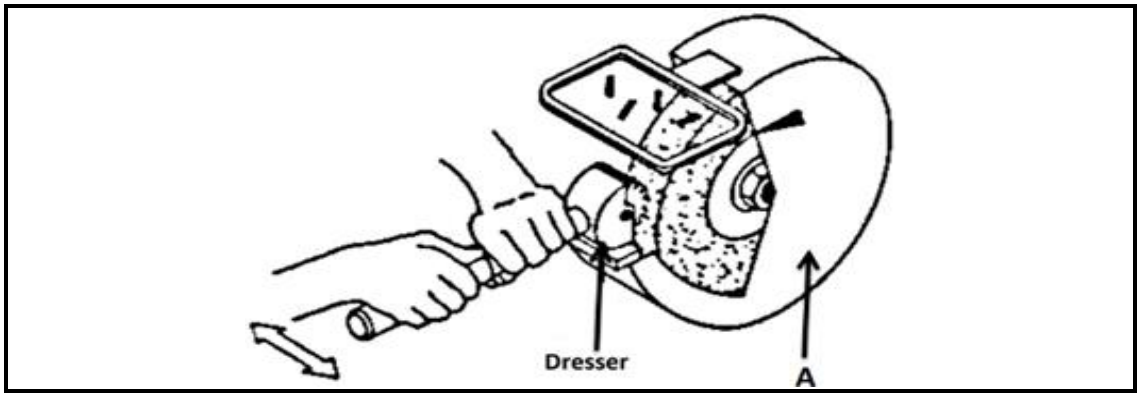


FIGURE 1

2.2.1 Name the power tool A (1)

2.2.2 Explain the task being carried out. (3)

2.2.3 List TWO safety practices that must be adhered to when using the power tool (A). (2)

2.2.4 Name the type of wheel dresser being used in FIGURE 2 (1)

2.3 A bench vice has to be mounted on a steel work bench; the bench vice needs to be bolted down using 4 × M10 bolts and nuts.

2.3.1 Name the power tool that is used to make the holes for the M10 bolts. (1)

2.3.2 List TWO safety factors to consider while using a power tool. (2)

2.3.3 Name the hand tool used to tighten bolts and nuts. (1)

2.3.4 List THREE aspects to consider when caring for a power tool. (3)

2.4 List TWO care and maintenance practices for a pneumatic impact wrench. (2)
[20]

QUESTION 3

3.1 Give ONE function of each of the following measuring instruments:

3.1.1 Outside calliper

3.1.2 Steel ruler

3.1.3 Straight edge

3.1.4 Feeler gauge

3.1.5 Screw pitch or thread gauge

(5 × 1) (5)

3.2 FIGURE 2 shows a combination set.

Name the labelled components by writing the name next to the letter (A−D) in the ANSWER BOOK and providing ONE function of each component. (8)

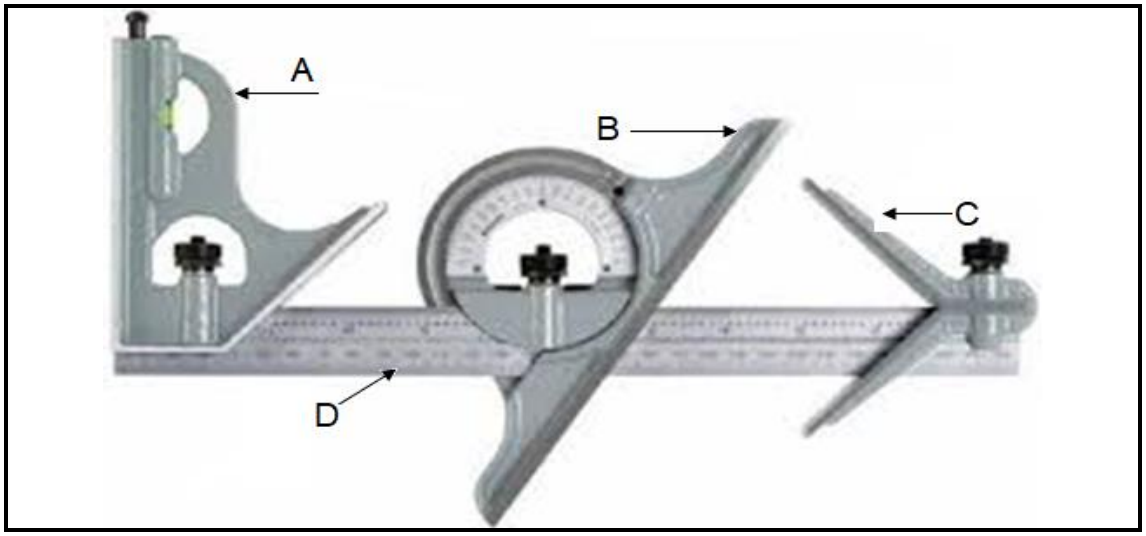


FIGURE 2

3.3 Name the tool that is used to check the squareness and flatness of a work piece. (2)
[15]

QUESTION 4

4.1 FIGURE 3 below shows a measurement on an outside micro meter.

Write the correct measurement indicated in the ANSWER BOOK. (3)

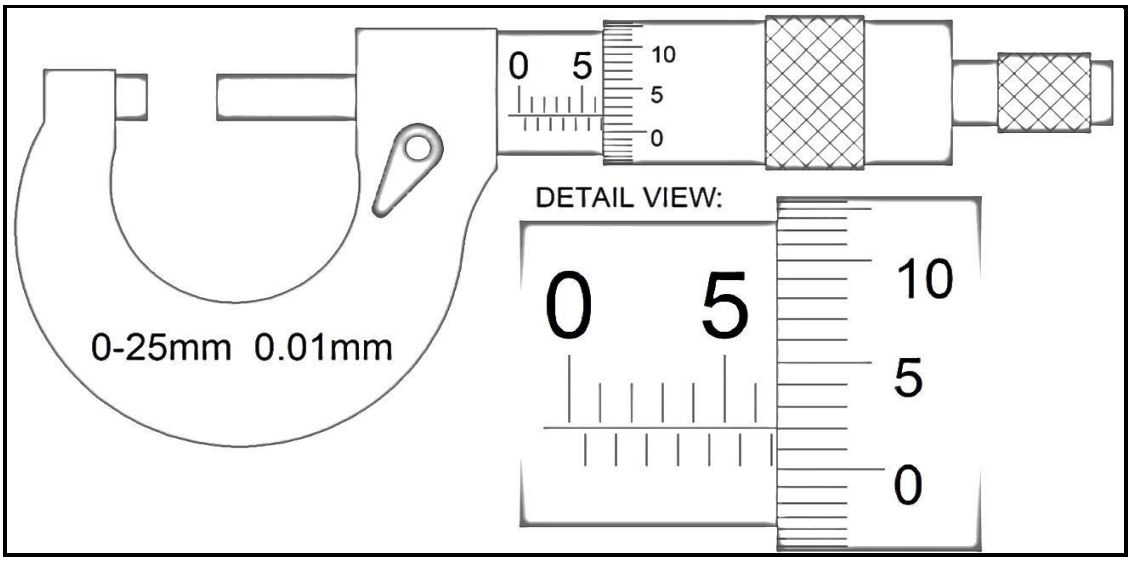


FIGURE 3

4.2 FIGURE 4 shows THREE different images (A, B and C).

Refer to each of the images and answer the questions that follow.

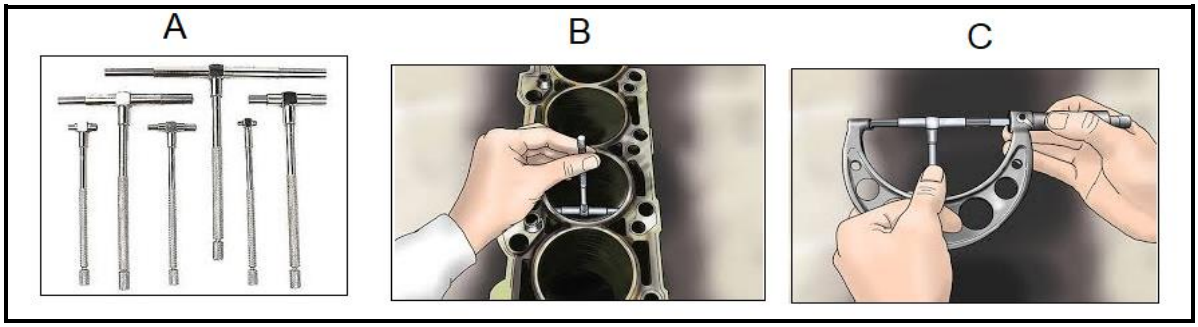


FIGURE 4

4.2.1 Name the measuring tool shown in image A. (1)

4.2.2 Explain the task being carried out in image B. (3)

4.2.3 Explain the task being carried out in image C. (3)

[10]

QUESTION 5

5.1 Calculate the weight of an electric motor with a mass of 68 kg.

HINT: W = m × g (3)

5.2 Give the SI unit of measurement for the following:

5.2.1 Length

5.2.2 Mass

5.2.3 Electrical current

(3 × 1) (3)

5.3 Convert 10 °C to degrees Fahrenheit.

HINT: °F = (1,8 × °C) + 32 (4)

[10]

QUESTION 6

6.1 FIGURE 5 below shows a task being performed.

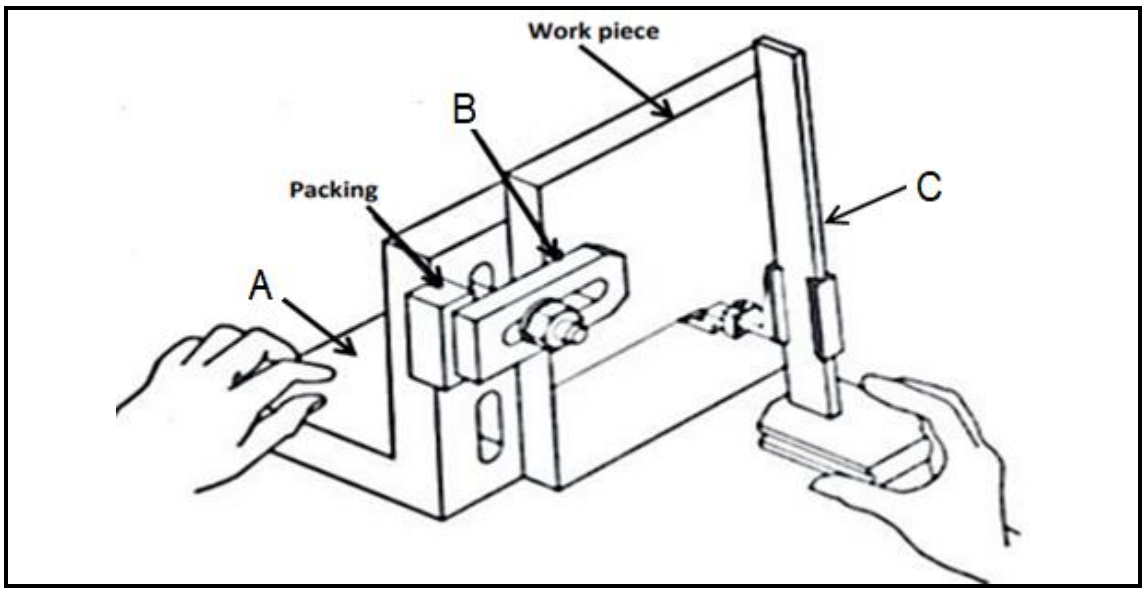


FIGURE 5

6.1.1 Name the labelled components by writing only the answer next to the letter (A–C) in the ANSWER BOOK.

6.1.2 Explain the task being carried out.

(2 × 3) (6)

6.2 Draw, name and label a centre and dotting punch showing the angle of each tip. (4)

[10]

QUESTION 7

The DIAGRAM SHEET (attached) shows an isometric view of a machine part.

To scale 1:1 and in first-angle orthographic projection, draw the following:

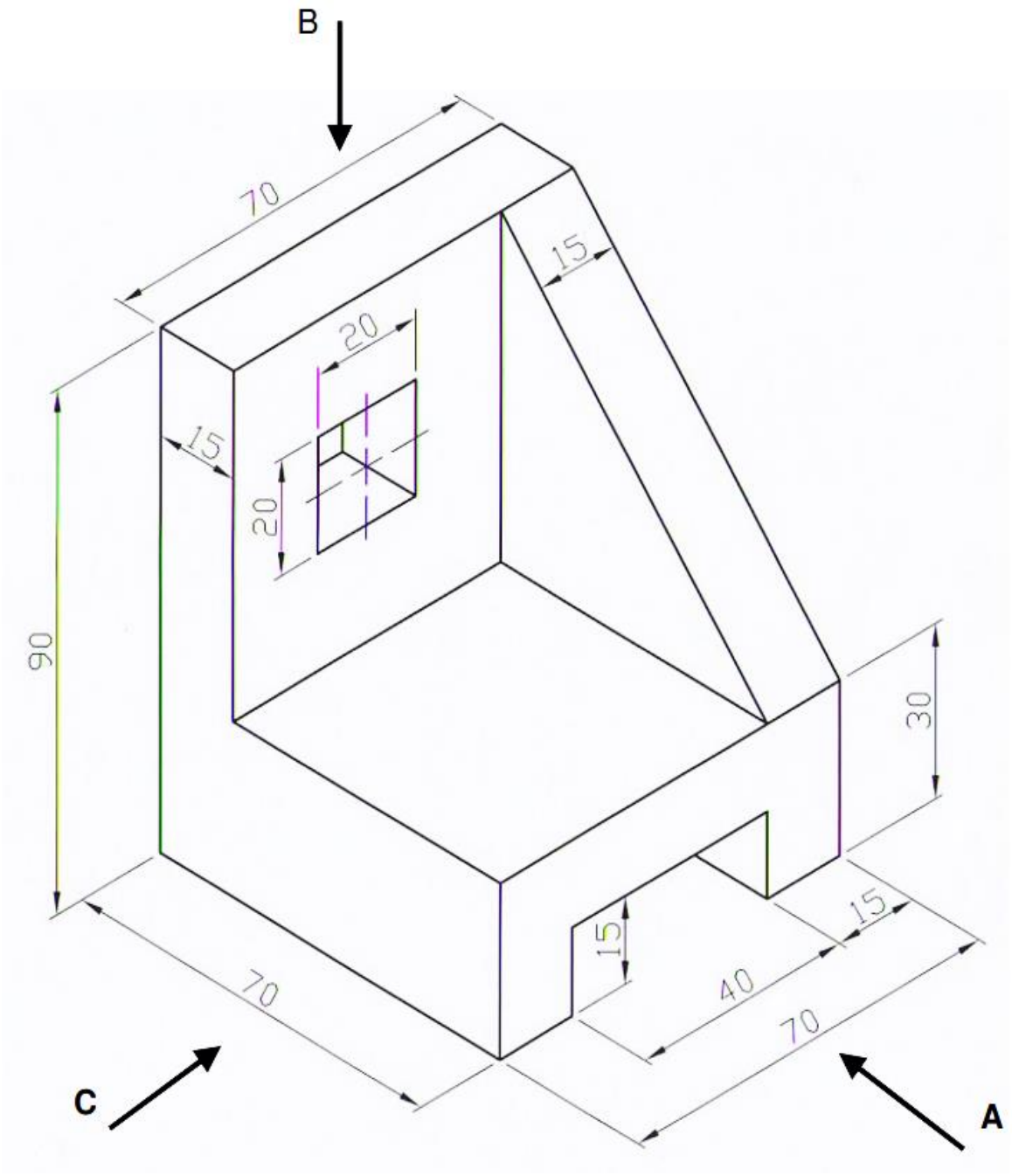
7.1	Front view (A)	(3)
7.2	Top view (B)	(4)
7.3	Left view (C)	(3)
7.4	Insert one dimension per view	(3)
7.5	Insert the projection symbol in a space below left view.	(2)
		[15]

TOTAL: 100

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DIAGRAM SHEET



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