higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ENGINEERING TECHNOLOGY
NQF LEVEL 2

(6021012)

12 November 2018 (X-Paper)
09:00–12:00

This question paper consists of 8 pages and 1 addendum.

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. ALL sketches MUST be neat, clean and in proportion.
5. Clearly cross out ALL work you do NOT want to be marked.
6. Start each question on a NEW page.
7. Drawings must be done on a clean A4 sheet provided. Refer to the attached ADDENDUM A.
8. Write neatly and legibly.

NCV

QUESTION 1

1.1 Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (1.1.1–1.1.5) in the ANSWER BOOK.

1.1.1 A V-block is used to …

A support round shafts for marking-off purpose.
B mark out metal work.
C support workpieces when measuring or marking off.
D set off lines on a surface at right angles to a given edge.

1.1.2 Spanners are used to …

A tighten and loosen bolts with hexagonal shaped socket slots.
B tighten and loosen screws with hexagonal shaped socket slots.
C tighten and loosen hexagonal bolts and nuts.
D torque bolts and nuts.

1.1.3 Calipers are used for ...

A taking transfer measurements.
B measuring inside or outside diameters.
C measuring inside and outside measurements.
D scribing parallel lines from the edge of a workpiece.

1.1.4 The symbol 'K' stands for … (SI UNIT)

A million.
B meter.
C thousand.
D kilogram.

1.1.5 The accuracy of slip gauges is within … precision.

A 0,01 mm
B 0,00001 mm
C 0,001 mm
D 2,001 mm

(5 × 1) (5)

NCV

1.2 Choose a description from COLUMN B that matches an item in COLUMN A. Write only the letter (A–F) next to the question number (1.2.1–1.2.5) in the ANSWER BOOK.

COLUMN A		COLUMN B	
1.2.1	Luminous intensity	A	used to measure length, depth, inside and outside measurements
1.2.2	Compressor	B	used to mark a line with a series of dots
1.2.3	Dotting punch	C	is the amount of light emitted by a source
1.2.4	Vernier caliper	D	the long side is used in hard to reach places
1.2.5	Allen keys	E	used to power air tools and for spray painting
		F	used to measure thread pitch

(5 × 1) (5)

1.3 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (1.3.1–1.3.5) in the ANSWER BOOK.

1.3.1 A hammer head is fixed to a wooden shaft handle by means of a wedge.

1.3.2 An engineer's square consists of a stock and a long thin blade.

1.3.3 Meter is the SI unit for an electrical conductor's resistance.

1.3.4 An angle grinder is a machine used to cut or grind.

1.3.5 An internal micrometre is used for measuring outside diameters.

(5 × 1) (5)

1.4 Give ONE word for each of the following descriptions. Write only the word next to the question number (1.4.1–1.4.5) in the ANSWER BOOK.

1.4.1 It is used mainly to mark holes that are to be drilled.

1.4.2 A smooth and uncut edge of a file.

1.4.3 Action required when drilling masonry.

1.4.4 The spirit level has a glass tube that holds an air bubble in water.

1.4.5 Highly accurate blocks are stacked together to give the required length that is to be measured.

(5 × 1) (5)

[20]

Copyright reserved

QUESTION 2

2.1 Name FIVE types of hammers used in the industry. (5)

2.2 State the uses of circlip pliers. (2)

2.3 Name TWO types of circlip pliers used in the industry. (2)

2.4 Different jobs require the use of different types of files.

Name FOUR types of files used in the industry. (4)

2.5 Make a neat sketch of a flat file. Insert TWO labels. (3)
[16]

QUESTION 3

3.1 Study FIGURE 1 and answer the questions.

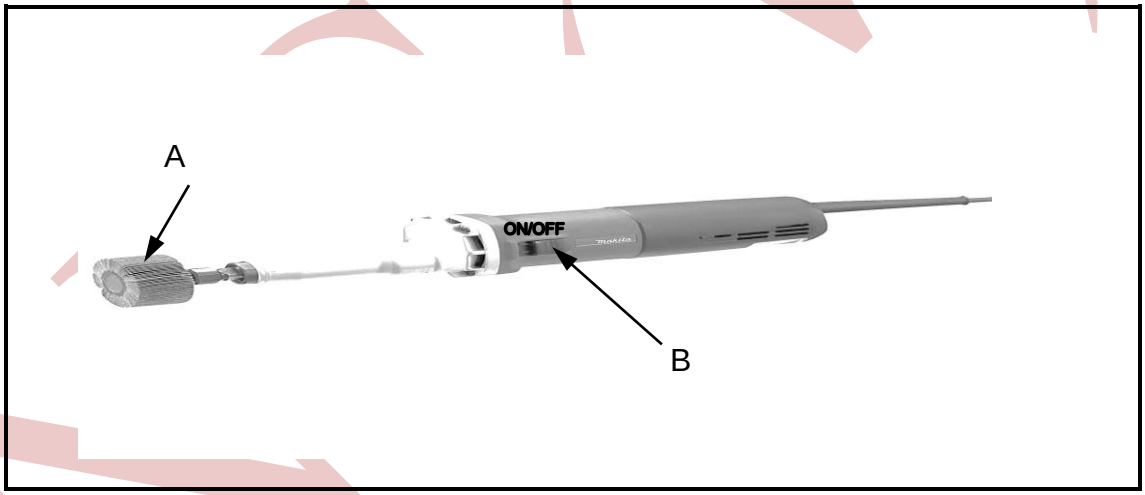


FIGURE 1

3.1.1 Name the power tool shown in FIGURE 1. (1)

3.1.2 Name the parts labelled A and B in FIGURE 1. (2)

3.2 State the SIX steps to follow when changing the speed on a pedestal drilling machine with a belt drive system. (6)

3.3 State the purpose of the following pneumatic tools:

3.3.1 An impact wrench. (2)

3.3.2 A blow gun. (2)

3.4 Explain the difference between a metal grinding disc and diamond cutting disc. (4)
[17]

Copyright reserved

QUESTION 4

4.1 Refer to FIGURE 2 below and answer the questions.

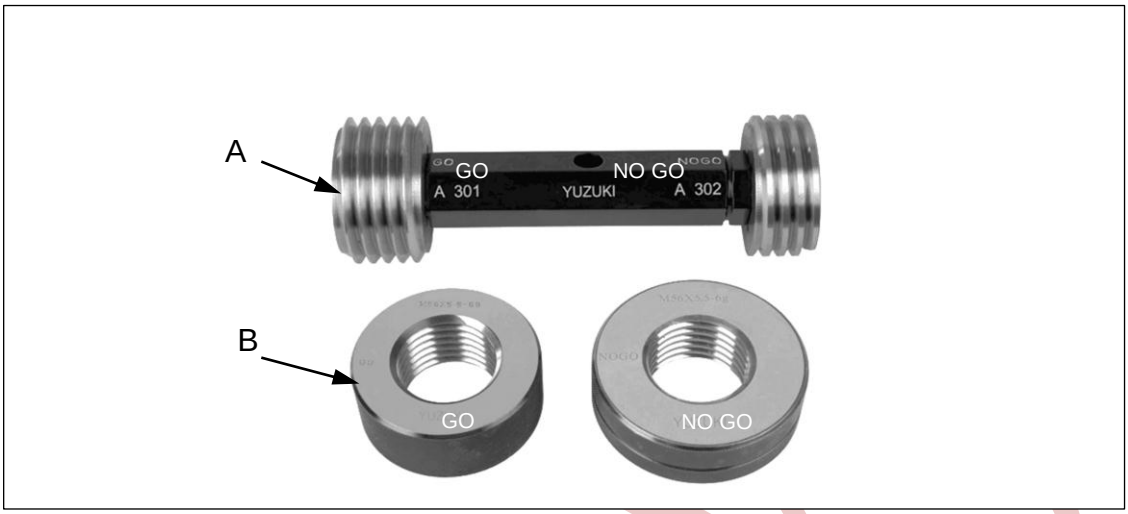


FIGURE 2

4.1.1 Name the gauges labelled A and B. (2)

4.1.2 State the use of each of the gauges mentioned in QUESTION 4.1.1 (2)

4.2 Make a neat labelled sketch of a tape measure showing the hook, blade and lock. (4)

4.3 Explain why the end hook of the tape measure is intentionally riveted loosely. (2)

4.4 State ONE fact to consider when caring and maintaining each of the following measuring equipment:

4.4.1 An engineer's rule

4.4.2 A spirit level

4.4.3 A thermometer

(3 × 1) (3)
[13]

NCV

QUESTION 5

5.1 FIGURE 2 shows a precision measuring tool. Answer the questions.

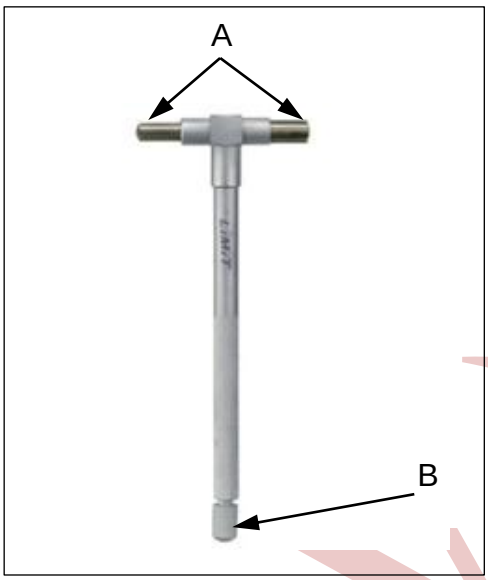


FIGURE 3

5.1.1 Name the precision measuring tool shown in FIGURE 3. (1)

5.1.2 Name the parts labelled A and B in FIGURE 3. (2)

5.1.3 State the function of the precision measuring tool. (1)

5.2 State the function of a surface texture plate. (2)
[6]

QUESTION 6

6.1 Write down the prefix that the following symbols represent:

6.1.1 T.

6.1.2 G.

6.1.3 M.

6.1.4 k.

(4 × 1) (4)

6.2 Calculate the work done if a force of 10N is applied to an object which moves over a distance of 3 m. (3)

6.3 FIGURE 2 shows marking-off equipment. Answer the questions.

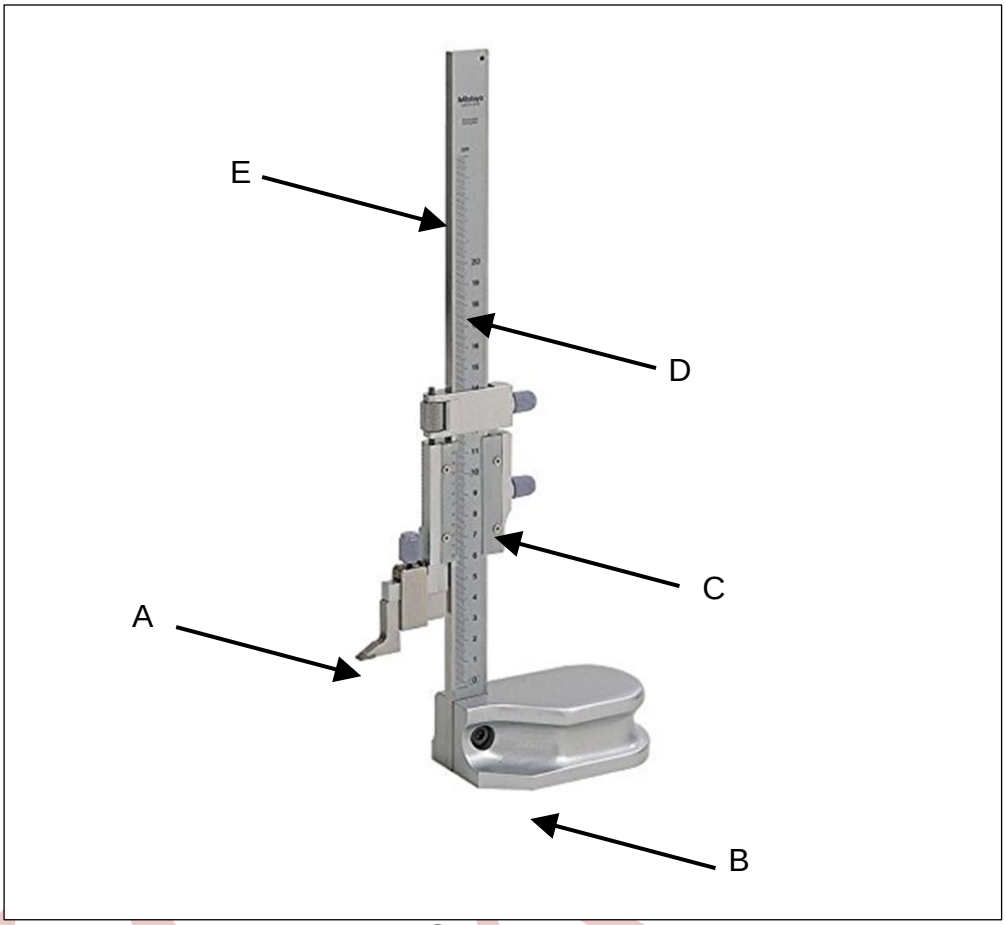


FIGURE 4

6.3.1 Name the marking-off equipment shown in FIGURE 4. (1)

6.3.2 Name the parts labelled A–E in FIGURE 4. (5)
[13]

QUESTION 7

7.1 FIGURE 5, on the ADDENDUM (attached), shows an isometric view of a machine part. Draw the following to scale 1 : 1 in first-angle orthographic projection:

7.1.1 A front view (A) (4)

7.1.2 A top view (B) (3)

7.1.3 A left view (C) (3)

7.1.4 Insert one correct dimension per view. (3)

7.1.5 Insert the projection symbol in the space below the left view. (2)
[15]

TOTAL: 100

Copyright reserved

ADDENDUM

QUESTION 7.1

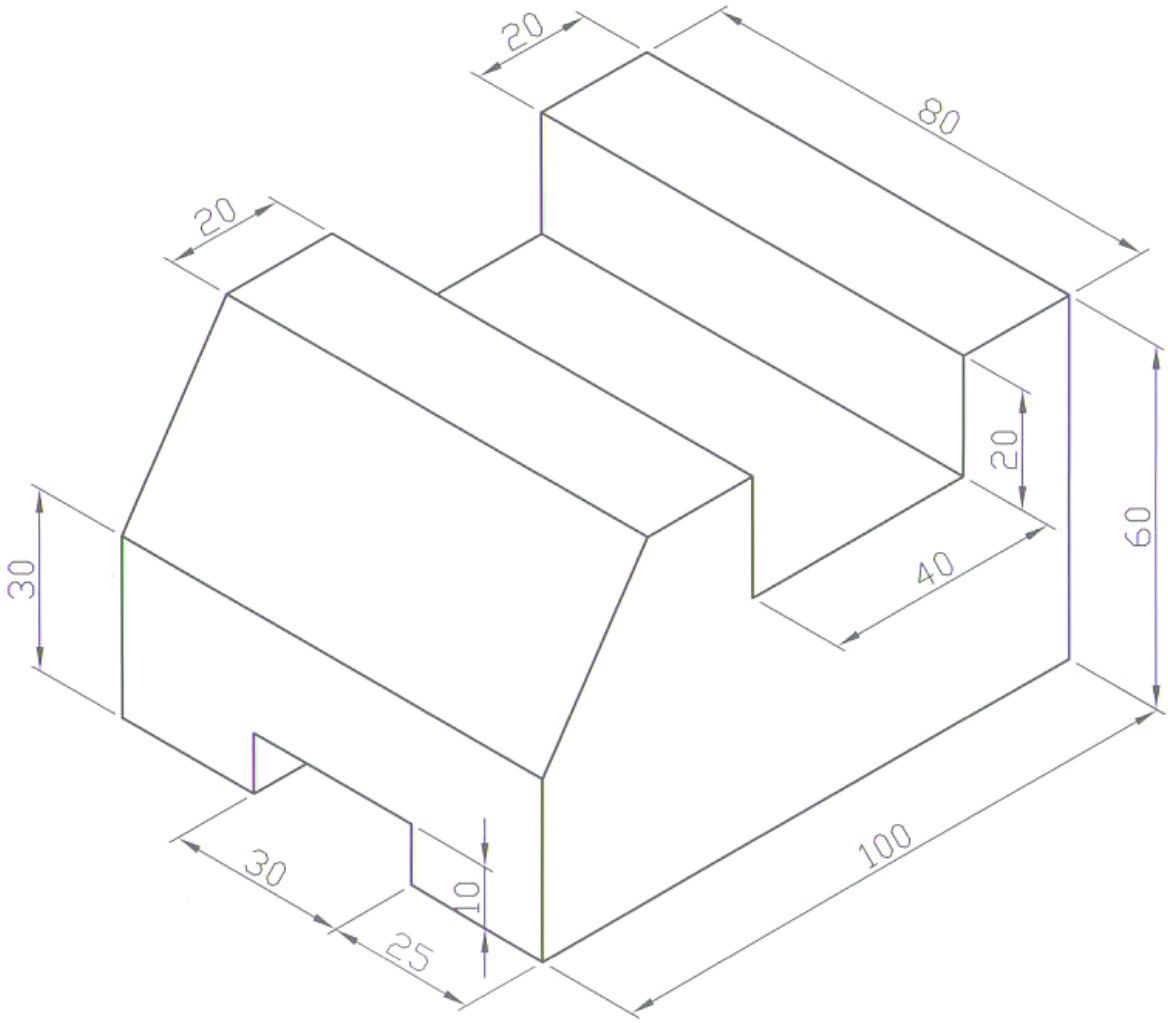


FIGURE 5

Copyright reserved