



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

**FITTING AND TURNING
NQF LEVEL 2**

(6011042)

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

Non-programmable calculators may be used.

This question paper consists of 7 pages.

461Q1N2422

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA
NATIONAL CERTIFICATE (VOCATIONAL)
FITTING AND TURNING
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. Use only a black or blue pen.
 5. 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 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 The maximum gap between the tool rest and the grinding wheel.



- A 3 mm
- B More than 3 mm
- C Less than 1 mm
- D More than 4 mm

1.1.2 The TWO most important aspects to consider when selecting grinding wheels:

- A Abrasive chips and minimum speed rating
- B Abrasive chips and grit size
- C Grit size and minimum speed rating
- D Grit size, minimum speed rating and temperature of work piece.



1.1.3 Identify the components.



- A Diamond wheel dresser inserts
- B Rose cutter
- C Slot cutter
- D Huntington wheel dresser inserts

1.1.4 The cutting angle of a drill bit for drilling mild steel is ...



- A 95°
- B 114°
- C 69°
- D 59°

1.1.5 The approximate soluble oil to water mixture ratio is ...

- A 1:24
- B 24:1
- C 1:2,4
- D 2,4:1



(5 × 2) (10)

1.2 FIGURE 1 below shows a grinding wheel assembly. Name the labelled parts by writing only the name next to the letter (A–E) in the ANSWER BOOK. (5)

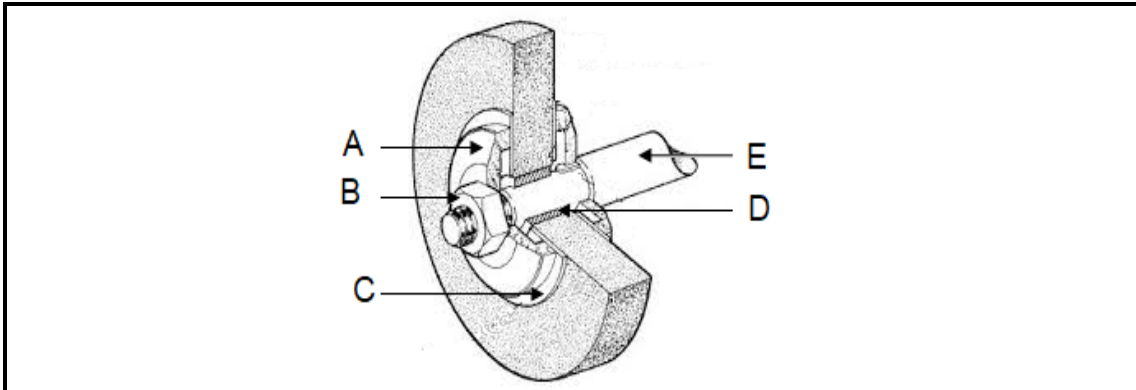


FIGURE 1

1.3 List FIVE good plant housekeeping or safety practises associated with threading and reaming. (5)

1.4 Give FIVE functions of cutting fluids. (5)

[25]



QUESTION 2

2.1 FIGURE 2 below shows a radial arm drilling machine. Name the labelled parts by writing only the name next to the letter (A–G) in your ANSWER BOOK. (7)

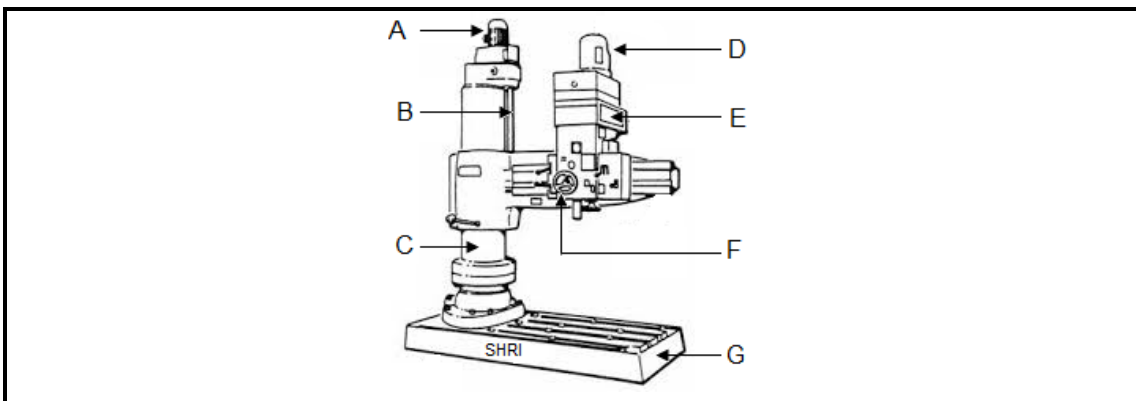


FIGURE 2

2.2 Calculate the spindle speed (N) in revolutions per minute for an aluminium work piece that must be drilled with a 50 mm drill bit. The cutting speed for aluminium is 50 m/min. (5)

2.3 FIGURE 3 shows a pedestal drilling machine. Give FIVE pre-checks that must be carried out on the machine before commencing with a drilling process. (5)

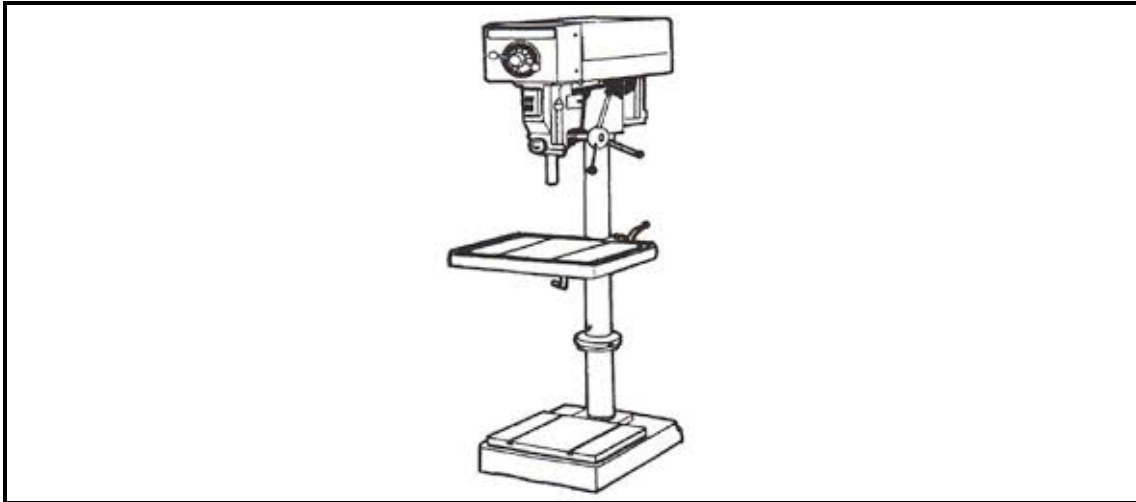


FIGURE 3

2.4 Various types of keys are used in an industry depending on the application.

Draw and label the following keys:

- Gib-head key, parallel key and a feather key. (3 × 2) (6)

2.5 Name TWO types of screws that form their own threads. (2) [25]



QUESTION 3

3.1 Indicate whether the following statements relating to a centre lathe are TRUE or FALSE by writing only 'True' or 'False' next to the question number (3.1.1–.1.5) in your ANSWER BOOK.

3.1.1 The chuck provides a range of speeds at which the spindle can rotate.

3.1.2 The foundation of the centre lathe is the bed.

3.1.3 The saddle fits on top of the bed and is guided by the vee and flat guide ways.

3.1.4 The cross slide is on top of the compound slide.

3.1.5 The four-jaw chuck is self-centring. (5 × 1) (5)



- 3.2 Explain the difference between *manual* and *automatic* feed on a centre lathe. (5)
 - 3.3 Give FIVE disadvantages of a four-jaw chuck. (5)
 - 3.4 A mandrel is a shaft or tube which holds work pieces accurately in position while been machined. (5)
 - Draw a double-cone mandrel.
 - Show the fixed cone, loose cone, nut and the work piece.
 - 3.5 List FIVE malfunctions that can occur while operating a centre lathe. (5)
- [25]**

QUESTION 4

- 4.1 Choose the name from COLUMN B that matches with the component in COLUMN A. Write only the letter (A–J) next to the question number (4.4.1–4.1.8) in the ANSWER BOOK.

COLUMN A	COLUMN B
	<p>A arbor support</p> <p>B base</p> <p>C arbor</p> <p>D cutter</p> <p>E table</p> <p>F knee</p> <p>G column</p> <p>H overarm</p> <p>I saddle</p> <p>J chuck</p>

(8 × 1) (8)

- 4.2 Name FIVE items personal protective equipment (PPE) that must be worn when working on a milling machine. (5)
- 4.3 Give FIVE factors that need to be considered when selecting the cutting feed on a milling machine. (5)

4.4 Explain FIVE things that need to be monitored on a milling machine during the machining process. (5)

4.5 Give the meaning of the term, *roughing cut*. (2)
[25]



TOTAL: 100