



# higher education & training

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

## **NATIONAL CERTIFICATE (VOCATIONAL)**

### **FITTING AND TURNING NQF LEVEL 2**

(6011042)

**12 March 2018 (X-Paper)  
09:00–12:00**

**Calculators may be used.**

**This question paper consists of 6 pages.**

**TIME: 3 HOURS**  
**MARKS: 100**

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**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. Answer each question on a NEW page.
  5. Write neatly and legibly.
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**SECTION A**

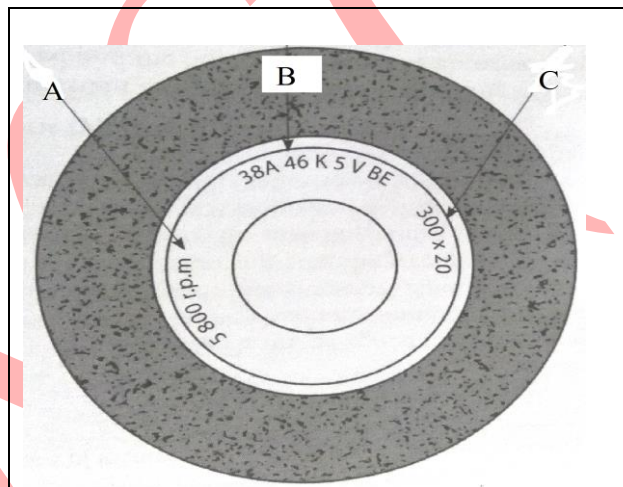
**QUESTION 1**

1.1 Indicate whether the following statements are TRUE or FALSE concerning Good Housekeeping in the work place. Choose the answer and write only 'True' or 'False' next to the question number (1.1.1–1.1.5) in the ANSWER BOOK.

- 1.1.1 Clean machines and tools after use.
- 1.1.2 Store tools and equipment in their allocated place.
- 1.1.3 Ensure that floors are free from oil and grease.
- 1.1.4 Place equipment in the red painted area of the workshop.
- 1.1.5 Good housekeeping means keeping the work area neat, tidy and free from hazards.

(5 × 1) (5)

1.2 FIGURE 1 shows a Grinding Wheel with specific markings. Label (A–C) in your ANSWER BOOK.



**FIGURE 1**

(3)

1.3 List the FIVE factors that must be considered when selecting a grinding wheel. (5)

1.4 Give TWO functions of cutting fluid when grinding. (2)

1.5 Draw a neat labelled figure of an Acme screw thread. Show the following labels: The pitch, the angle of the thread and the depth of the thread. (5)

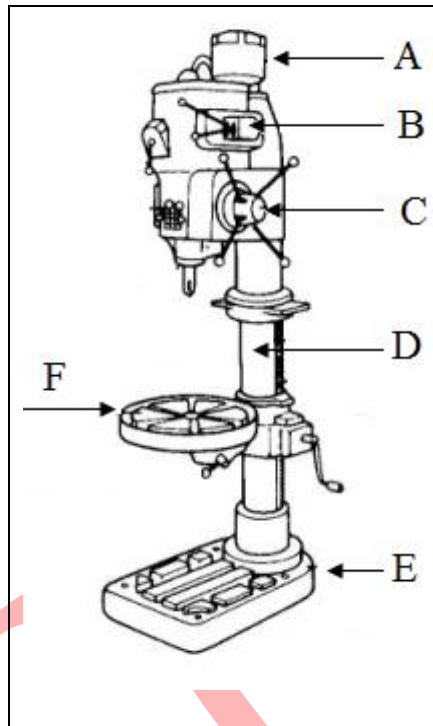
1.6 Taps are used to form internal threads. Name the THREE taps found in a set. (3)

1.7 State the function of a solid-die. (2)

**[25]**

**QUESTION 2**

2.1 FIGURE 2 shows a Pillar Type Drilling Machine. Label items (A–F) in your ANSWER BOOK.



**FIGURE 2**

2.2 List THREE pre-checks that need to be carried out on a pillar type drilling machine before any drilling operation can be performed. (6)

2.3 Calculate the spindle speed in revolutions per minute for drilling an 8mm diameter hole on an Aluminium plate. (3)

The cutting speed for Aluminium is 50m/min. (5)

2.4 While operating a pedestal drilling machine you notice that the machine has an unusual vibration. (6)

List FIVE possible problems that can cause the machine to vibrate. (5)

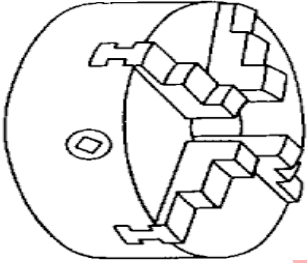
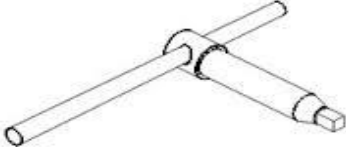
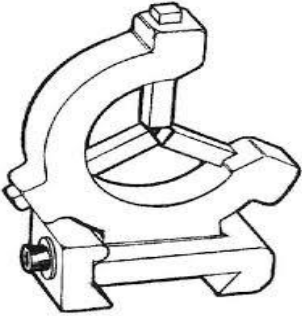
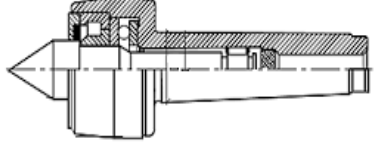
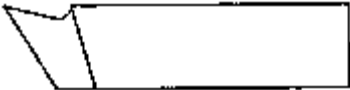
2.5 Draw and label the following types of keys:

Woodruff Key, Gib Head Key and a Taper Key. (6)

**[25]**

**QUESTION 3**

- 3.1 List FIVE items of Personal Protective Equipment (PPE) that a turner must use while operating a centre lathe. (5)
- 3.2 Name FIVE cutting tools that are used on a centre lathe. (5)
- 3.3 Choose a word from COLUMN B that matches the drawing in COLUMN A. Write only the letter (A–H) next to the question number (3.3.1–3.3.5) in the ANSWER BOOK.

COLUMN A	COLUMN B
3.3.1 	A three jaw chuck B tap wrench C lathe steady D ball centre E roughing tool F chuck key G four jaw chuck H revolving centre
3.3.2 	
3.3.3 	
3.3.4 	
3.3.5 	

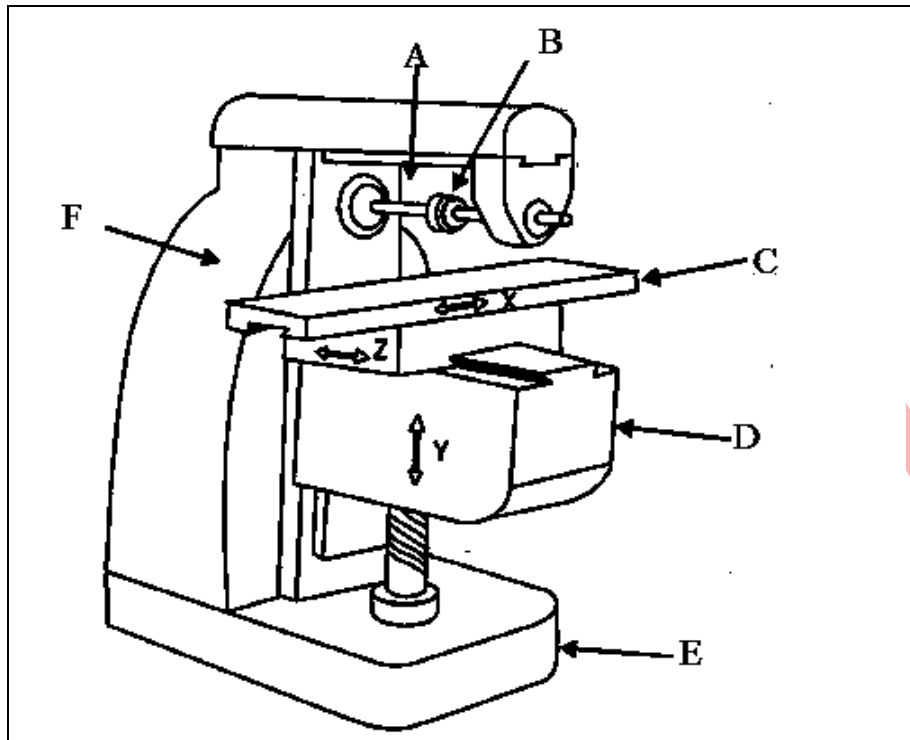
(5 x 1) (5)

- 3.4 Explain how a Knurling tool is set up on a lathe. (5)
- 3.5 Give FIVE reasons why it is important to clean a lathe after using it. (5)

**[25]**

**QUESTION 4**

4.1 FIGURE 3 shows A Milling Machine.



**FIGURE 3**

4.1.1 Label items (A–F) in your ANSWER BOOK.

4.1.2 State what 'X, Y and Z' represents in FIGURE 3.

(2 × 6) (12)

4.2 List FIVE machining operations that can be performed on a milling machine (5)

4.3 A slot cutter is a cutting tool used on a milling machine.

Draw a slot cutter, showing the cutting edges and the direction of rotation used for cutting. (4)

4.4 Give FOUR factors that needs to be consider when selecting the speed on a milling machine. (4)

[25]

**TOTAL: 100**