



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

**FITTING AND TURNING
NQF LEVEL 2**

(6011042)

**26 March 2021 (Y-paper)
13:00–16:00**

This question paper consists of 6 pages.

481Q1S2126

**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. Sketches should be large, neat and in good proportion and may be done in pencil.
 5. Use only a black or blue pen.
 6. Write neatly and legibly.
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QUESTION 1

- 1.1 Choose an item from COLUMN B that matches a description in COLUMN A. Write only the letter (A–K) next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
1.1.1	The sides of this type of thread are parallel to each other	A	coarse pitch V-thread
1.1.2	This thread is used where great pressure is required in one direction	B	lead
1.1.3	Type of thread used where repeated fastening and loosening is required	C	circular split die
1.1.4	This thread is used where extra core strength is required	D	square thread
1.1.5	A die that has an opening on one side	E	buttress thread
1.1.6	Used to ream standard size holes	F	fine-pitch thread
1.1.7	Also called a bottoming tap	G	parallel reamers
1.1.8	Used to give a smooth finish to tapered holes	H	plug tap
1.1.9	Flutes of this reamer are shorter than other types of reamers	I	machine reamers
1.1.10	Can cause a tap to break	J	flutes clogged with metal chips
		K	taper reamer

(10 × 1) (10)

- 1.2 State FIVE types of safety equipment that must be worn when using a pedestal grinder. (5)
- 1.3 The choice of cutting-tool material is related to the type of material that needs to be cut. (5)
- Name FIVE types of materials that cutting tools are made of. (5)
- 1.4 Explain how a diamond-tipped wheel dresser is used to dress a grinding wheel. (5)

[25]

QUESTION 2

2.1 FIGURE 1 shows a radial-arm drilling machine.

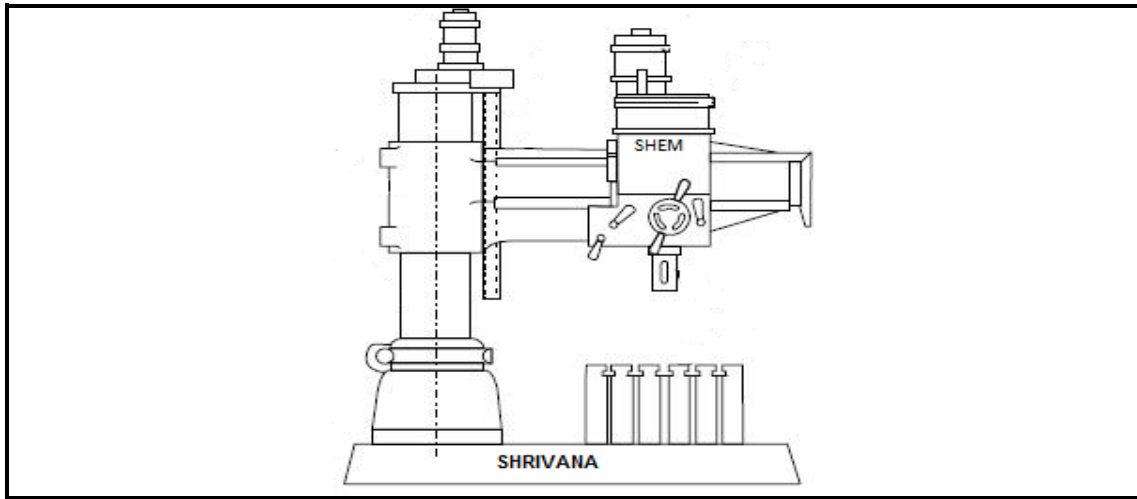


FIGURE 1

State FIVE characteristics of a radial-arm drilling machine.

(5)

2.2 Name FOUR different types of drilling machines.

(4)

2.3 State FIVE ideal drilling conditions.



(5)

2.4 Make a drawing of each of the following types of keys and add the name:

2.4.1 Gib-head key

2.4.2 Woodruff key

2.4.3 Taper key

2.4.4 Square key



2.4.5 Rounded key

(5 × 1)

(5)

2.5 Make a neat drawing and explain how a castle nut is installed on a bolt.


(6)

[25]


QUESTION 3

3.1 Name FIVE components of a centre lathe. (5)

3.2 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (3.2.1–3.2.5) in the ANSWER BOOK.

3.2.1 The lead screw advances the carriage during thread-cutting operations. 

3.2.2 The feed shaft advances the carriage and cross slide when the appropriate feed lever is engaged.

3.2.3 The driving or catch plate is a circular plate which fits onto the spindle nose. 

3.2.4 The purpose of the chuck is to locate and hold the cutting tool in its correct position.

3.2.5 The four-jaw self-centring chuck, not only clamps the workpiece in place, but also locates or centres it.


(5 × 1) (5)

3.3 FIGURE 2 shows a centre lathe steady.



FIGURE 2

Explain why centre lathe steadies are used when machining a workpiece. (5)

3.4 Name FIVE types of cutting tools used on a lathe.  (5)

3.5 State FIVE advantages of using mandrels when cutting a workpiece on a centre lathe. (5)

[25]

QUESTION 4

4.1 State FIVE types of personal protective equipment (PPE) that must be worn when operating a milling machine. (5)



4.2 Name FIVE different cutters used on a milling machine. (5)

4.3 FIGURE 3 shows a milling machine. Name the parts indicated and write only the answer next to the letter (A–H) in the ANSWER BOOK.

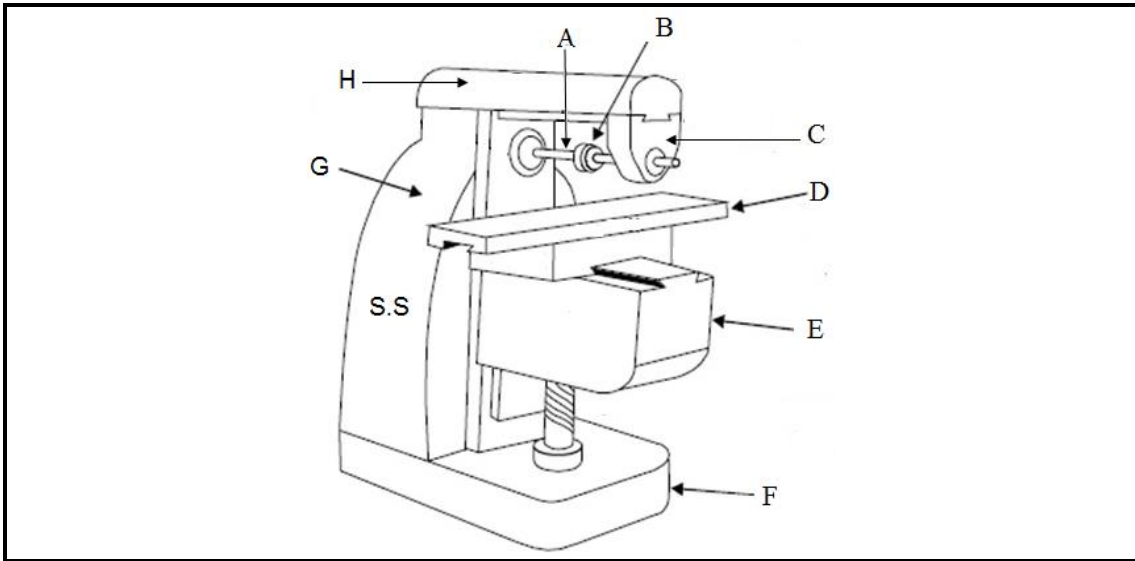



FIGURE 3

(8 × 1) (8)

4.4 FIGURE 4 shows a workpiece that needs to be manufactured using a milling machine. 

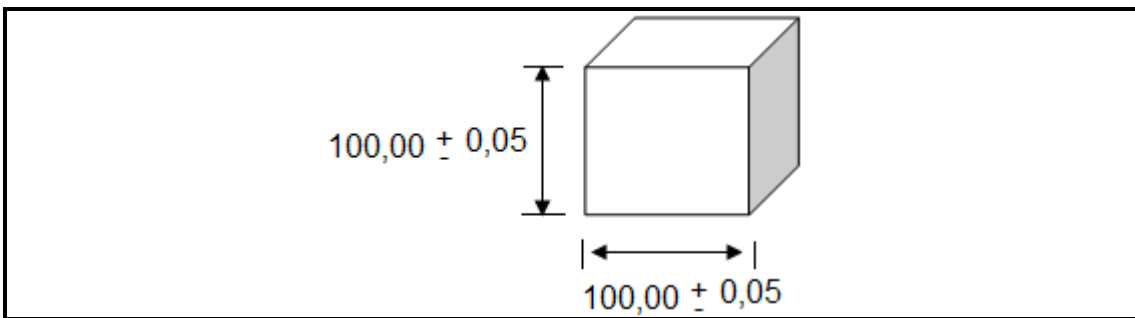


FIGURE 4

Explain the tolerance $100,00 \pm 0,05$.



(5)

4.5 Name TWO types of measuring equipment that is used to check dimensions on a workpiece.

(2)
[25]

TOTAL: 100