higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

FITTING AND TURNING
NQF LEVEL 2

(6011042)

11 March 2020 (Y-paper)
13:00–16:00

This question paper consists of 6 pages.

479Q1S2011

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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. Start each question on a new page.
5. Write neatly and legibly.

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QUESTION 1

1.1 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (1.1.1–1.1.5) in the ANSWER BOOK.

1.1.1 The speed rating of a bench grinding machine must be marked clearly on the machine.

1.1.2 A user shall be permitted to use a grinding wheel that exceeds the speed stated by the manufacturer.

1.1.3 Eye protection must be used when dressing a grinding wheel.

1.1.4 Grinding wheels must be mounted with compressible washers and strong metal flanges.

1.1.5 You are only allowed to use a grinding machine once you have been trained to use it.

(5 × 1) (5)

1.2 Identify the indicated components of the grinding wheel assembly in FIGURE 1 by writing the answer next to the letter (A–E) in the ANSWER BOOK.

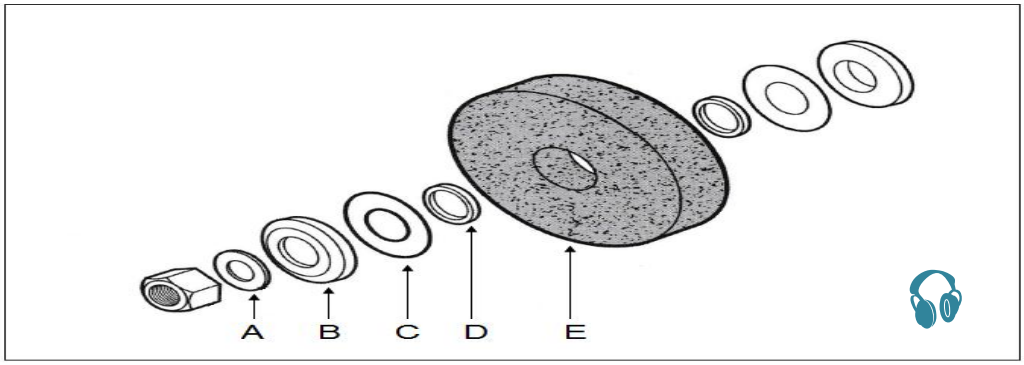

FIGURE 1 (5)

1.3 Calculate the rotational speed of a grinding wheel in r/pm if the grinding wheel has a diameter of 200 mm and a turning speed of 1 750 m/min. (5)

1.4 Identify the indicated components of the screw thread in FIGURE 2 by writing the answer next to the letter (A–E) in the ANSWER BOOK.

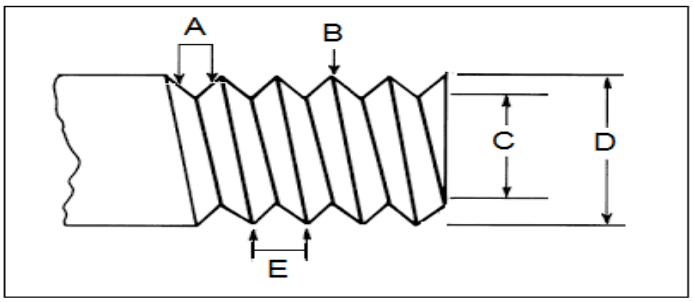

FIGURE 2 (5)

1.5 Name THREE different taps of which a set of hand taps consists. (3)

1.6 Give TWO causes of tap breakage. (2)
[25]

QUESTION 2

2.1 Choose a word from COLUMN B that matches the description in COLUMN A. Write only the letter (A–G) next to the question number (2.1.1–2.1.6) in the ANSWER BOOK.

COLUMN A		COLUMN B	
2.1.1	Used for gripping and supporting a workpiece	A	chuck key
2.1.2	Used to tighten the jaws of a chuck	B	angle plates
2.1.3	Supports round a workpiece while drilling	C	machine vice
2.1.4	Used to remove a tapered sleeve from a tapered spindle	D	v-block
2.1.5	Supports workpiece at right angles	E	parallel blocks
2.1.6	Supports workpiece from underneath when drilling operation is performed	F	drill drift
		G	stepped block

(6 × 1) (6)

2.2 Show the difference between a tapered and a straight shank drill bit with the aid of neat, labelled sketches. (6)

2.3 Give TWO prechecks that must be carried out on a pillar-type drilling machine before drilling can take place. (2)

2.4 Keys are used to locate gears, pulleys and couplings on a shaft and to prevent movement between them.

Draw and label FOUR different types of keys. (8)

2.5 Name THREE types of screws that make their own threads. (3)
[25]

QUESTION 3

3.1 List FIVE turning operations that can be performed on a centre lathe. (5)

3.2 Name each component used on a centre lathe as shown in FIGURE 3 by writing the answer next to the letter (A–E) in the ANSWER BOOK.

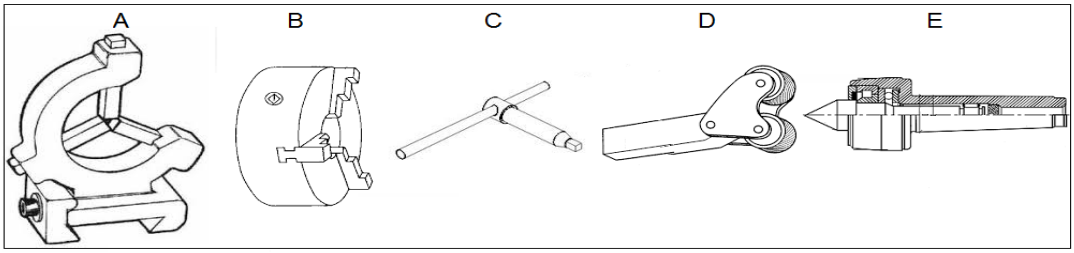

FIGURE 3 (5)

3.3 List FOUR disadvantages of a four-jaw chuck. (4)

3.4 Explain the difference between *manual* and *automatic feed* during turning. (5)

3.5 Explain how knurling on a workpiece is done on a centre lathe. (6)

[25]

QUESTION 4

4.1 State FIVE safety factors to keep in mind while operating a milling machine. (5)

4.2 State the functions of each of the following milling machine parts:

4.2.1 Arbor

4.2.2 Bracing arms

4.2.3 Table trips

4.2.4 Saddle

4.2.5 Spindle

(5 × 1) (5)

4.3 Name the milling cutting tool shown in FIGURE 4 and explain ONE way in which it is used.



FIGURE 4 (4)

4.4 State the steps to set up a milling machine for a 12 mm depth cut. Assume that the workpiece is secure and aligned correctly. (7)

4.5 State FOUR factors to take into consideration when monitoring a milling machine and the workpiece before a milling operation is performed. (4)

[25]

TOTAL: 100

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