higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

FITTING AND TURNING
NQF LEVEL 2

NOVEMBER 2011

(6011042)

18 November (X-Paper)
09:00 – 12:00

This question paper consists of 6 pages and 1 page-formula sheet.

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. Write neatly and legibly.

QUESTION1: GENERAL

1. Choose an item from COLUMN B that matches a description/word in COLUMN A. Write only the letter (A – K) next to the question number (1.1 – 1.10) in the ANSWER BOOK.

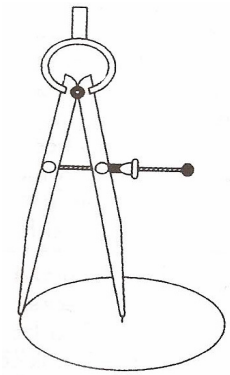
	COLUMN A		COLUMN B
1.1	The cause of accidents in a workshop	A	inspection for cracks
1.2	Protects your head when welding	B	readily available for emergencies
1.3	The job card gives	C	wear protective goggles
1.4	Routine maintenance is necessary	D	never leave a machine unattended
1.5	Fire fighters	E	the electrode is covered in flux
1.6	Colour coding	F	reduces friction
1.7	Ring test	G	relates either the name of the client who requested the job or the work piece that you machined
1.8	Arc welding	H	welding hood
1.9	Cutting fluid	I	keep your machine in good condition
1.10	Safety measures when working with the grinding wheel.	J	identify certain safety measure
		K	wear safety boots in the workshop

(10 x 1) **[10]**

QUESTION 2: MARKING OFF

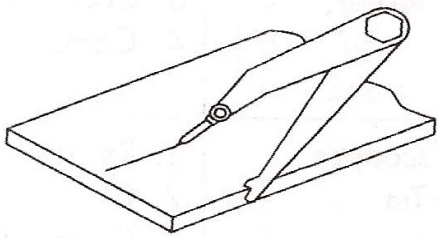
2.1 Name the following marking off tools.

2.1.1



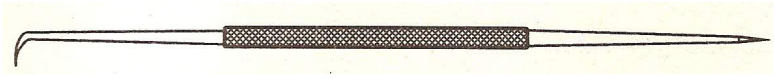
(1)

2.1.2



(1)

2.1.3



(1)

2.2 Make a neat drawing of the following punches. Show the angle of the punch point in degrees.

2.2.1 Centre punch (1)

2.2.2 Dotting punch (1)

2.3 Explain what is meant by the following statements:

2.3.1 Datum line (1)

2.3.2 The reference face (1)

2.4 Name THREE different types of marking off mediums. (3)
[10]

QUESTION 3: DRILLING MACHINE

3.1 Name FOUR different types of drilling machines. (4)

3.2 A 30 mm diameter hole must be drilled into a piece of mild steel at 5 rev/sec. Calculate the cutting speed in metres per minutes. (4)

3.3 Whilst drilling the operator may experience problems that can affect the quality and finish drilled holes in the work piece. List THREE drilling faults that will affect the quality of the work piece. (3)

3.4 When cutting with the drilling machine you have to use cutting fluids for certain reasons. Give FOUR reasons why you have to use cutting fluid. (4)

3.5 What is the meaning of the following drilling processes?

3.5.1 Countersinking (1)

3.5.2 Counter boring (1)
[17]

QUESTION 4: MILLING MACHINE

4.1 State reasons for using the following accessories:

4.1.1 Dividing head (1)

4.1.2 Milling cutter (1)

4.1.3 The machine vice (1)

4.2 Explain why it is necessary to apply the following health and safety practices.

4.2.1 Stop the milling machine before you remove the metal chips. (1)

4.2.2 Wear overalls and make sure that you fasten all loose clothing. (1)

4.3 At what spindle speed, (in revolution per minutes), would a milling machine be set using a 120 mm diameter cutter, to machine a work piece, if the required cutting speed is 40 meter per minutes. (4)

4.4 A milling cutter is 200 mm in diameter and has 16 teeth. The cutting speed for the material is given at 20 meters per minutes and the feed per tooth is 0,071 mm. Calculate the feed in millimetres. (4)

4.5 Explain step by step how you would mount and set up an angle plate with a clock gauge onto the machine table of a milling machine. (5)
[18]

QUESTION 5: SURFACE GRINDER

5.1 What is the use of a surface-grinding machine? (1)

5.2 Name THREE types of surface-grinding machines. (3)

5.3 Explain what is the meaning of the following information found on the grinding wheel?

G 56 K V

Write the correct answer next to the letters A – D.

A	G
B	56
C	K
D	V

(4)

5.4 While grinding a plate on the surface grinder you observe the following problems. Name ONE cause and recommend ONE solution to these problems.

5.4.1 Scratch marks on the work piece (2)

5.4.2 Burn marks on the work piece (2)

5.5 Explain what the difference between the following terms is.

5.5.1 Dressing a grinding wheel (2)

5.5.2 Truing a grinding wheel (2)
[16]

QUESTION 6: CENTRE LATHE

6.1 Name FOUR different parts that constitute a centre lathe. (4)

6.2 For what FOUR purposes is a Lathe used? (4)

6.3 Chucks are of different types depending on the job you want to perform. What are the advantages and the disadvantages of the three-jaw chuck? (4)

6.4 Make a neat drawing of the following cutting tools.

6.4.1 A round-nose tool (1)

6.4.2 A rough tool (1)

6.4.3 A finishing tool (1)

6.5 Your fitting workshop has asked you to machine a brass work piece with the diameter of 60 mm and a spindle speed of 800 rpm. What speed will you use to cut your work piece? (4)
[19]

QUESTION 7: WELDING/JOINTS

7.1 Name THREE types of welding processes. (3)

7.2 You are asked to weld a work piece using a TIG welding. Draw up an operational plan on preparation of the processes. (4)

7.3 When you have completed the work piece there are some tasks that you need to do. List THREE tasks or activities that are required. (3)
[10]

TOTAL: 100

FORMULA SHEET

1. $S = \pi \times D \times N$

2. $V = \pi DN$

3. $F = f_t \times T \times N$

4. $S = \frac{\pi DN}{60}$

