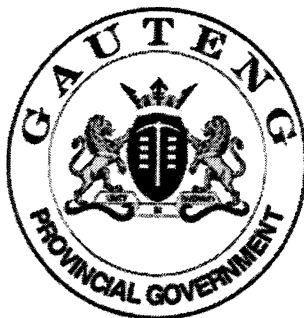


SENIOR CERTIFICATE EXAMINATION
SENIORSERTIFIKAAT-EKSAMEN



OCTOBER / NOVEMBER
OKTOBER / NOVEMBER

2004

METALWORK
METAALWERK

(Second Paper: Theory)
(Tweede Vraestel: Teorie)

SG

719-2/2

16 pages
16 bladsye

METALWORK SG: Paper 2
Theory



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GAUTENGSE DEPARTEMENT VAN ONDERWYS
SENIORSERTIFIKAAT-EKSAMEN

METAALWERK SG
(Tweede Vraestel: Teorie)

TYD: 2 uur

PUNTE: 200

INSTRUKSIES:

- Beantwoord AL die vrae.
 - Sketse mag gebruik word om jou antwoorde te illustreer.
 - Laat 'n reël oop en trek 'n lyn nadat jy elke vraag beantwoord het.
-
-

VRAAG 1
MEERVOUDIGEKEUSE-VRAE

Verskeie moontlike antwoorde (A – D) word vir elk van die volgende vrae voorsien. Skryf die nommers 1.1 tot 1.20 onder mekaar in jou antwoordboek neer. Kies die **letter** (uit A – D) wat die regte antwoord verteenwoordig. Skryf net die **letter** langs die toepaslike nommer neer.

- 1.1 'n Sweismasjien verander die stroom van die kragnet op die volgende manier.
- A. Vanaf lae spanning en lae intensiteit na hoë spanning en hoë intensiteit
 - B. Vanaf lae spanning en hoë intensiteit na hoë spanning en lae intensiteit
 - C. Vanaf hoë spanning en lae intensiteit na lae spanning en hoë intensiteit
 - D. Al die bogenoemdes, mits die krag aangeskakel is.
- 1.2 Die instrument of gereedskap wat gebruik word om die korrekte herinskakeling van 'n draadsnybeitel tydens die draadsnyproses op 'n metaal draaibank te verseker is 'n _____.
- A. mikrometerkraag
 - B. draadmeterwyser
 - C. leiskroef
 - D. draadsnybeitel en stelmaat
- 1.3 Die gereedskap waarmee parallellyne op 'n reguit oppervlak getrek word, is _____.
- A. 'n kweepasser
 - B. 'n staalliniaal en kraspen
 - C. 'n krasblok
 - D. 'n ingenieurswinkelhaak en kraspen

GAUTENG DEPARTMENT OF EDUCATION
SENIOR CERTIFICATE EXAMINATION

METALWORK SG
(Second Paper: Theory)

TIME: 2 hours

MARKS: 200

INSTRUCTIONS:

- Answer ALL the questions.
 - Sketches may be used to illustrate your answers.
 - Leave a line and rule off after you have answered each question.
-
-

QUESTION 1
MULTIPLE-CHOICE QUESTIONS

Various possible answers (A – D) are provided for each of the following questions. Write down the numbers 1.1 to 1.20 below one another in your answer book. Select the letter (from A – D) which represents the correct answer. Write down only the **letter** next to the appropriate number.

- 1.1 A welding machine transforms the current from the mains in the following way.
- A. From low voltage and low intensity to high voltage and high intensity
 - B. From low voltage and high intensity to high voltage and low intensity
 - C. From high voltage and low intensity to low voltage and high intensity
 - D. All of the above as long as the mains are switched on.
- 1.2 The instrument or tool used to ensure the correct re-engagement of a thread-cutting tool during the thread-cutting process on a metal lathe is a _____.
- A. micrometer collar
 - B. thread dial indicator
 - C. lead screw
 - D. threading tool and setting gauge
- 1.3 The tool/s used to draw lines parallel to a straight surface is/are called a/an _____.
- A. hermaphrodite calliper / odd-leg calliper
 - B. steel rule and scribe
 - C. scribing block
 - D. engineer's square and scribe

- 1.4 'n Stuk metaal word as smeebaar beskryf indien dit die vermoë het om _____ .
- A. na sy oorspronklike vorm toe terug te keer sodra die las verwyder word
 - B. slytasie te weerstaan
 - C. skok of stampe te weerstaan
 - D. maklik bewerk kan word sonder hitte
- 1.5 Die instrument wat saam met die buitmikrometer gebruik word om die binnediameter van 'n silinder te bepaal word 'n _____ genoem.
- A. noniuspasser
 - B. binnemeetpasser
 - C. staalliniaal
 - D. staalmaatband
- 1.6 Die belangrikste tegniek wat bemeester moet word wanneer 'n boog geslaan word, is _____ .
- A. om die elektrode teen 'n goeie hoek te hou
 - B. om die verlangde lengte te hou
 - C. die smelting van die elektrode met die metaal
 - D. om die elektriese boog tussen die elektrode en die metaal te behou
- 1.7 Indien 'n stuk staal vibreer terwyl dit op 'n draaibank gemasjineer of met 'n boormasjien geboor word, sê ons dit _____ .
- A. word omboor
 - B. word ompen
 - C. word bedraad
 - D. tril/kletter
- 1.8 Die belangrikste rede hoekom 'n handvyl met 'n plat vyl verwar word, is dat _____ .
- A. dit van verskillende materiale vervaardig word
 - B. die handvyl met sy hele lengte langs parallel is en 'n veilige kant het
 - C. plat vyle van wolfram gemaak en uitgegloeï word
 - D. Al die bogenoemdes.
- 1.9 Die koelmiddel wat aanbeveel word wanneer daar deur koper geboor word, is ____ .
- A. olie
 - B. seepwater
 - C. terpentyn
 - D. paraffien
- 1.10 Die gereedskap wat gebruik word om 'n Morse-spiraalboor met 'n tapse skag uit 'n staanboor te verwyder staan bekend as 'n _____ .
- A. dryfyser
 - B. skroewedraaier
 - C. splitpen
 - D. bolpenhamer

- 1.4 A piece of metal is said to be malleable if it has the ability to _____ .
- A. return to its original shape after a load has been removed
 - B. resist wear
 - C. resist shock or blows
 - D. be worked easily without heat
- 1.5 The instrument used in conjunction with the external micrometer to determine the inside diameter of a cylinder is called _____ .
- A. a vernier calliper
 - B. the inside calliper
 - C. a steel rule
 - D. a steel tape measure
- 1.6 The main technique to be mastered when striking an arc is _____ .
- A. to hold the electrode at a good angle
 - B. to keep the desired length
 - C. the fusion of the electrode to the metal
 - D. to maintain the electric arc between the electrode and the metal
- 1.7 If a piece of metal vibrates while it is being machined on a lathe or drilling machine, we say it is _____ .
- A. piping
 - B. pinning
 - C. threading
 - D. chattering
- 1.8 The main reason why a hand file is confused with a flat file is that _____ .
- A. they are made from different materials
 - B. the hand file is parallel for all its length and has a safe edge
 - C. flat files are made from tungsten and are annealed
 - D. All of the above.
- 1.9 The recommended coolant to be used when drilling through copper is _____ .
- A. oil
 - B. soap water
 - C. turpentine
 - D. paraffin
- 1.10 The tool used to remove a Morse twist drill with a tapered shank from a drill press is called a _____ .
- A. drift
 - B. screwdriver
 - C. cotter pin
 - D. ball pein hammer

- 1.11 'n Groefyster word gebruik om _____ .
- A. groewe in plaatmetaal te sny
 - B. gevoude nate af te werk
 - C. klinklaste af te werk
 - D. 'n stuk plaat te buig
- 1.12 Die hoek waarteen snygereedskap gehou word om die afval wat weggesny word maklik te verwyder, staan bekend as die _____ .
- A. afskuinsing
 - B. groef
 - C. helling
 - D. terugsnyding
- 1.13 Die foutspeling wat op enige betrokke werkstuk toegelaat word, staan bekend as _____ .
- A. verwringing
 - B. baardvorming
 - C. vermoeidheid
 - D. toleransie
- 1.14 Die korrekte volgorde waarin tappe vir die sny van interne skroefdraad gebruik word, is soos volg:
- A. Boom; spitsstuk; naloop
 - B. Naloop; boom; tap
 - C. Tap; naloop; boom
 - D. Boom; naloop; tap
- 1.15 Die hoeveelheid metaal wat deur 'n saagsnit verwyder word, staan bekend as _____ .
- A. kerf
 - B. set
 - C. puim
 - D. patroon
- 1.16 **Vertinning** van 'n soldeerbout beteken _____ .
- A. doop die soldeerbout in vloeimiddel
 - B. bedek die punt van die soldeerbout met soldeersel
 - C. maak die punt koud deur dit in water te druk
 - D. om die soldeerbout te gebruik om tinplaat te soldeer
- 1.17 Die lengte van 'n vyl word bepaal deur meting van _____ .
- A. die afstand tussen die tande van die vyl
 - B. die punt van die vyl tot by die doring
 - C. die punt van die vyl tot by die handvatsel
 - D. die punt van die vyl tot by die skouer

- 1.11 A groover is used to _____ .
- A. cut grooves in sheet metal
 - B. complete folded seams
 - C. complete riveted joints
 - D. bend a piece of sheet
- 1.12 The angle at which cutting tools are ground to allow an easy escape for the waste being cut away is called the _____ .
- A. bevel
 - B. chamfer
 - C. rake
 - D. clearance
- 1.13 The margin of error permitted on any particular job is called _____ .
- A. twisting
 - B. warding
 - C. fatigue
 - D. tolerance
- 1.14 The correct order in which taps are used for cutting internal threads is as follows:
- A. Plug; taper; second
 - B. Second; plug; taper
 - C. Taper; second; plug
 - D. Plug; second; taper
- 1.15 The amount of metal taken out by a saw cut is called _____ .
- A. kerf
 - B. jig
 - C. pumice
 - D. template
- 1.16 **Tinning** a soldering bit means _____ .
- A. dipping the soldering iron in flux
 - B. coating the bit tip with solder
 - C. making the bit cold by placing it in water
 - D. using the soldering iron to solder tinplate
- 1.17 The length of a file is determined by measuring _____ .
- A. the distance between the teeth of the file
 - B. from the front of the file to the tang
 - C. from the front of the file to the handle
 - D. from the front of the file to the shoulder

1.18 'n Mens kan **boogoë** (arc eyes) kry van _____ .

- A. slypwerk
- B. sweissoldeer-werk
- C. sweiswerk
- D. skuurwerk

1.19 Asetileenbottels het passtukke met _____ .

- A. linksom-skroefdraad
- B. regsom-skroefdraad
- C. vierkantige skroefdraad
- D. v-vormige skroefdraad

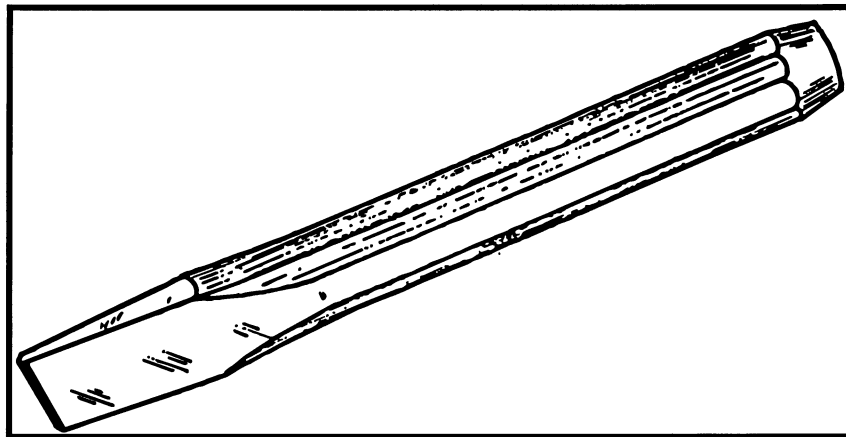
1.20 'n Vorm van oppervlakafwerking wat op aluminium gebruik word, is _____ .

- A. nasnywerk
- B. slyp
- C. anodisering
- D. elektroplatering

[20]

VRAAG 2

Die diagram hieronder illustreer 'n platkoubeitel.



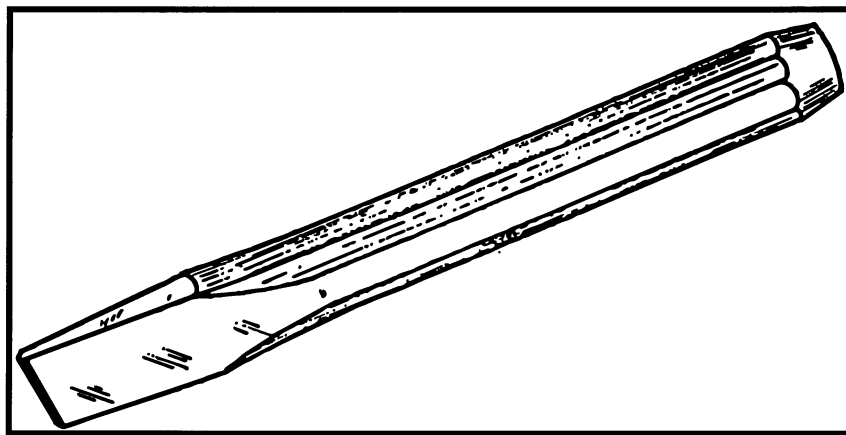
- 2.1 Watter tipe platkoubeitel word deur die illustrasie voorgestel? (1)
- 2.2 Die platkoubeitel is een van die gereedskapstukke wat maklik in die werkswinkel gemaak kan word. Verduidelik volledig hoe jy 'n platkoubeitel sal verhard en temper. (10)
- 2.3 Wat beteken dit as 'n beitel 'n **paddastoelkop** het? (2)
- 2.4 Watter DRIE prosesse kan gebruik word om dié beitel reg te maak? (3)
- 2.5 Waarom is so 'n beitel gevaarlik? (1)
- 2.6 Teen watter hoek behoort die snykant geslyp te word? (1)

- 1.18 One can get **arc eyes** from _____ .
- A. grinding
 - B. brazing
 - C. welding
 - D. sanding
- 1.19 Acetylene bottles have fittings that have _____ .
- A. left-hand threads
 - B. right-hand threads
 - C. square threads
 - D. v-threads
- 1.20 A form of surface finish used on aluminium is called _____ .
- A. chasing
 - B. honing
 - C. anodizing
 - D. electroplating

[20]

QUESTION 2

The diagram below illustrates a flat cold chisel.



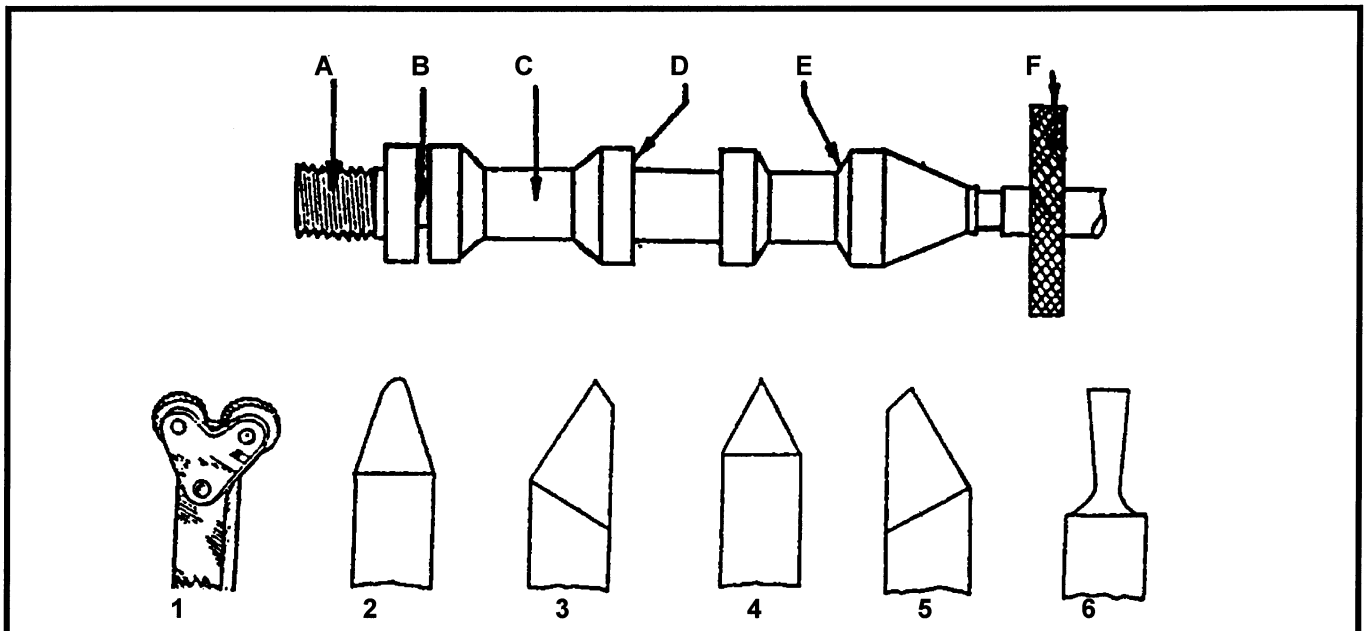
- 2.1 What type of flat cold chisel does the illustration represent? (1)
- 2.2 The flat cold chisel is one of the tools that could easily be made in the workshop. Explain fully how you would harden and temper a flat cold chisel. (10)
- 2.3 What is meant by a chisel with a **mushroomed head**? (2)
- 2.4 Which THREE processes could be used to rectify the chisel? (3)
- 2.5 Why is such a chisel dangerous? (1)
- 2.6 At what angle should the cutting edge be ground? (1)

2.7 Watter beitel is geskik om 'n spygleuf te sny? Gee 'n rede vir jou antwoord.

(2)
[20]

VRAAG 3

3.1 Die figuur hieronder toon ses verskillende snyprosesse, wat A – F benoem is, wat op 'n draaibank uitgevoer kan word. Nommers 1 – 6 toon die verskillende beitels wat vir hierdie prosesse gebruik word.



Teken die onderstaande tabel in jou antwoordboek oor en vul die naam van die proses in teenoor die korrekte letter A – F. Pas nou die regte nommer van die beitel 1 – 6 by die ooreenstemmende prosesse.

PROSES	BENOEM DIE PROSES	BEITELNOMMER
A		
B		
C		
D		
E		
F		

(12)

3.2 Noem die onderdeel van die draaibank wat gebruik word om die snybeitel mee vas te hou.

(2)

3.3 Watter tipe materiaal word gebruik om snybeitels mee te vervaardig? Gee 'n rede.

(2)

3.4 Wat is die doel van die vryloophoeke aan draaibank-snybeitels?

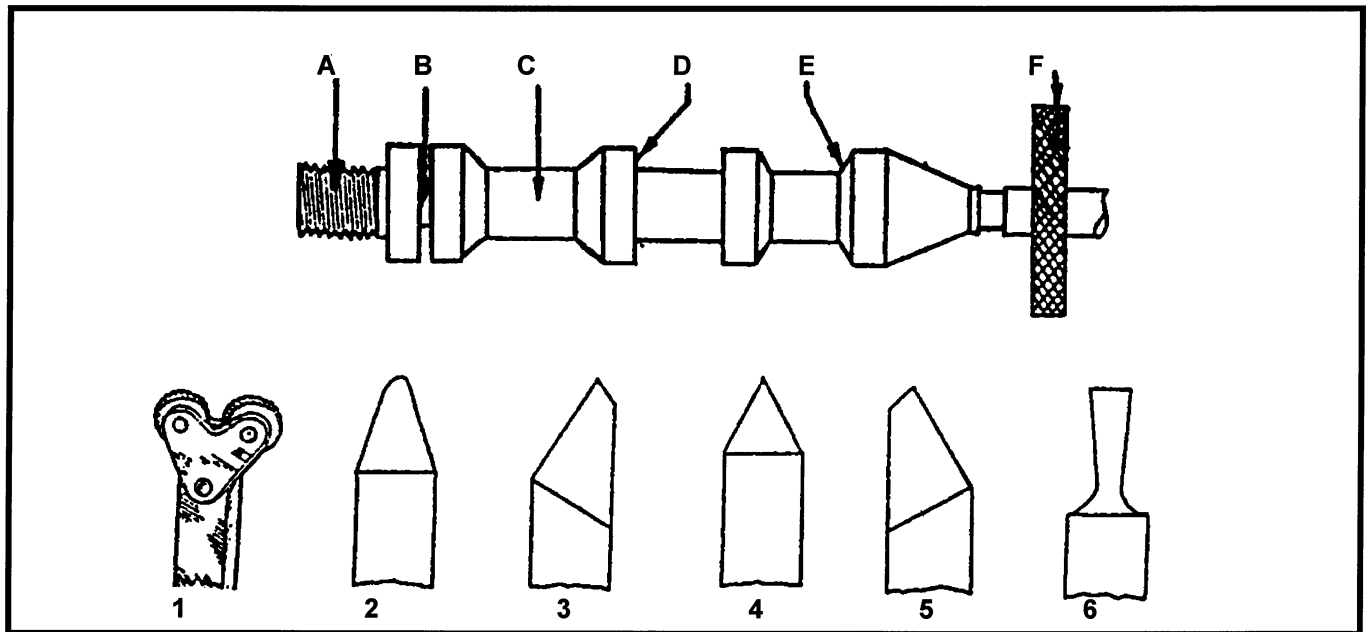
(2)

2.7 Which chisel is suitable for cutting a keyway? Give a reason for your answer.

(2)
[20]

QUESTION 3

3.1 The figure below shows six different cutting processes labelled A – F that can be done on a lathe. Numbers 1 – 6 show the different tools that are used for these processes.



Copy the table below in your answer book and fill in the name of the process next to the correct letter A – F. Match the correct number of the cutting tools 1 – 6 with the corresponding process.

PROCESS	NAME THE PROCESS	TOOL NUMBER
A		
B		
C		
D		
E		
F		

(12)

3.2 Name the part of the lathe which is used to hold the cutting tool.

(2)

3.3 What material is used to make lathe cutting tools? Give a reason.

(2)

3.4 What is the purpose of clearance angles on lathe cutting tools?

(2)

- 3.5 Noem TWEE oorwegings wat in gedagte gehou moet word wanneer draaibankbeitels skerp gemaak moet word.

(2)
[20]

VRAAG 4

Dui aan of die volgende stellings WAAR of ONWAAR is.

- 4.1 Die bylstaak word gebruik om parallelle buigings soos aan die teenoorgestelde kante van 'n boks te maak.
- 4.2 Die versinkboor word gebruik om die middelste gaatjie op 'n werkstuk te boor wat die middel van die draaibank moet ontvang.
- 4.3 Die getande kant van buigbare lemme is verhard terwyl die res van die lem buigbaar is.
- 4.4 Groewing is 'n proses waar klein ronde duikies of koepels op die metaal geplaas word.
- 4.5 Soldering is die proses waarin twee metale aan mekaar gelas word deur middel van 'n metaal met 'n lae smeltpunt.
- 4.6 Tappe is gereedskapstukke wat spesifiek vir die sny van binneskroefdraad gebruik word.
- 4.7 'n Algemene reël vir boorwerk is "groot boor – vinnige spoed", "klein boor – stadige spoed".
- 4.8 Die voordeel daaraan verbonde om 'n ringsleutel te gebruik is dat dit nie van die moer af kan gly nie.
- 4.9 Die proses waarmee klein groefies verwyder word nadat 'n snykant met 'n klein gutssteen of oliesteen geslyp is, word ruiming genoem.
- 4.10 Die elektrode-deklagie is ontwerp om die sweispoel teen die omliggende omgewing te beskut.

1 x 10 = [10]

- 3.5 Name TWO considerations that must be borne in mind when sharpening lathe tools.

(2)
[20]

QUESTION 4

Indicate whether each of the following statements is TRUE or FALSE.

- 4.1 The hatchet stake is used to make parallel bends such as on the opposite sides of a box.
- 4.2 A countersink drill is used to drill the centre hole on a workpiece to receive the lathe centre.
- 4.3 Flexible blades have the toothed edge hardened while the remainder of the blade is flexible.
- 4.4 Fluting is a process of placing small circular indentations or domes on the metal.
- 4.5 Soldering is the process of joining two metals together by using another metal which has a low melting point.
- 4.6 Taps are tools used specifically for cutting internal threads.
- 4.7 A general rule for drilling is "large drill – fast speed", "small drill – slow speed".
- 4.8 The advantage of using a ring spanner is that it cannot slip off the nut.
- 4.9 The process of removing small grooves after grinding a cutting edge with a small slipstone or oilstone is called reaming.
- 4.10 The electrode coating is designed to shield the weld puddle from surrounding atmosphere.

1 x 10 = **[10]**

VRAAG 5

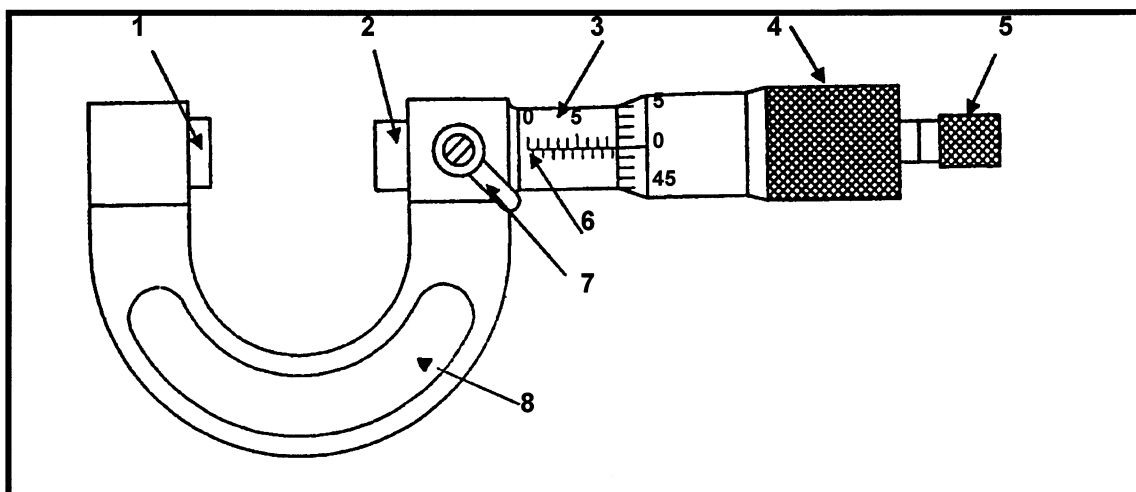
Pas elke **definisie** of **beskrywing** in **Kolom B** by 'n **term** in **Kolom A**. Skryf die nommers 5.1 tot 5.10 **onder mekaar** in jou antwoordboek neer en langs elke nommer **net die letter** van die alfabet wat die korrekte antwoord verteenwoordig.

KOLOM A	KOLOM B
5.1 Uitgloi	A diervet wat as 'n smeermiddel gebruik word
5.2 Sink	B verwys na die vertrekking of buiging in plaatmetaal
5.3 Nie-ysterhoudend	C mengsel van twee of meer metale
5.4 Ru-stuk	D 'n skroef met 'n sokkop
5.5 Gespe	E grys, sagte, rekbare metaal
5.6 Klemtoestel	F suurvloeimiddel wat in sagte soldeerwerk gebruik word
5.7 Beesvet	G versagting van 'n stuk metaal deur verhitting
5.8 Allooi	H growwe rand wat aan metaal agterbly na snywerk
5.9 Sink in soutsuur	I enige vorm van vasmaak- of klemgereedskap
5.10 Skroeftap/stifskroef	J metaal wat geen yster bevat nie
	K gat wat deur werkstuk geboor word
	L 'n skroef sonder 'n kop
	M 'n stuk metaal wat vir 'n metaalbewerking-proses voorberei is

[10]

VRAAG 6

Bestudeer die onderstaande diagram en beantwoord die vrae wat volg.



- 6.1 Watter meetinstrument stel die diagram voor? (1)
- 6.2 Benoem die dele wat 1 – 8 gemerk is. (8)
- 6.3 Noem TWEE gebruike van hierdie instrument. (2)

QUESTION 5

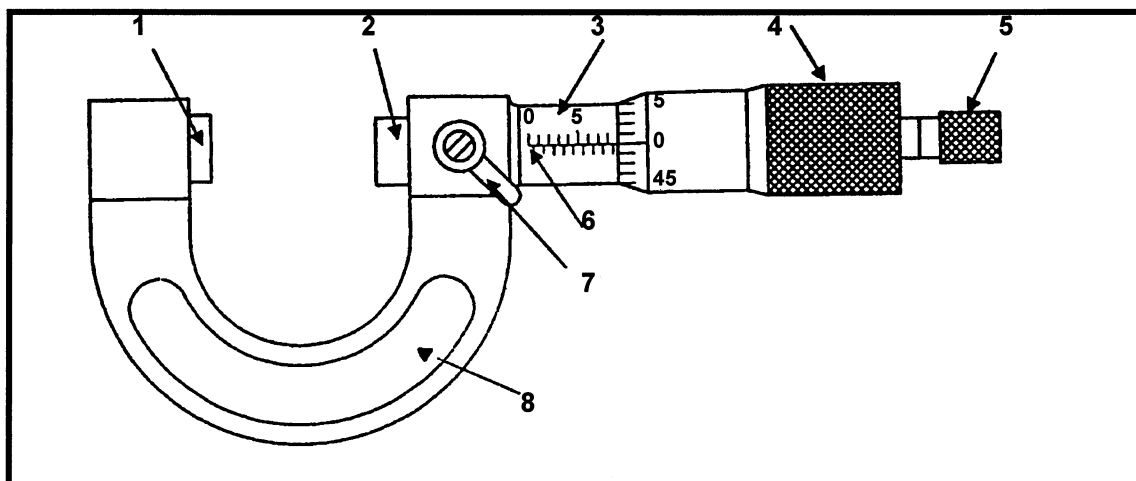
Match each **definition** or **description** in **Column B** with a **term** in **Column A**. In your answer book write down the numbers 5.1 to 5.10 **one below the other** and next to each number write down **only the letter** of the alphabet representing the correct answer.

COLUMN A	COLUMN B
5.1 Anneal	A animal fat used as a lubricant
5.2 Zinc	B refers to distortions or bends in sheet metal
5.3 Non-ferrous	C mixture of two or more metals
5.4 Blank	D a screw having a socket head
5.5 Buckle	E grey, soft, ductile metal
5.6 Jig	F acid flux used in soft soldering
5.7 Tallow	G softening a piece of metal by heating
5.8 Alloy	H rough edge left on metal after cutting
5.9 Killed spirits	I any form of fixing or holding device
5.10 Grub screw	J metals that contain no iron
	K hole drilled through workpiece
	L a screw without a head
	M a piece of metal prepared for a metal working process

[10]

QUESTION 6

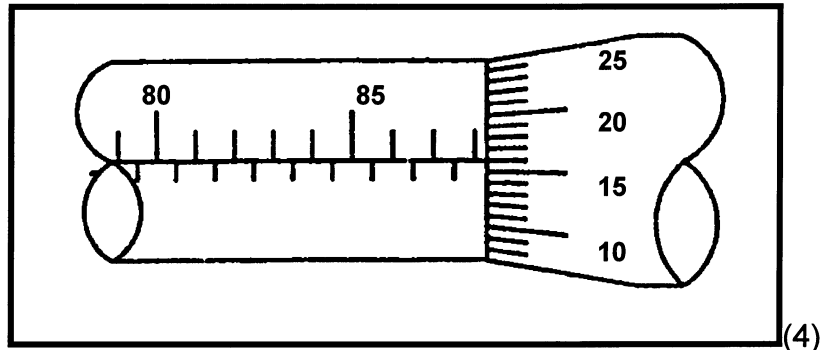
Study the diagram below and answer the questions that follow.



- 6.1 What measuring instrument does the diagram represent? (1)
- 6.2 Label the parts marked 1 – 8. (8)
- 6.3 State TWO uses of this instrument. (2)

6.4 Die onderstaande diagram toon lesings wat verkry is deur hierdie instrument te gebruik. Bereken die lesing onder die volgende opskrifte.

- 6.4.1 Maksimum verdeling
- 6.4.2 Minimum verdeling
- 6.4.3 Skroefdop-verdeling
- 6.4.4 Lesing



6.5 Verduidelik hoe jy hierdie instrument sal toets vir akkuraatheid.

(3)

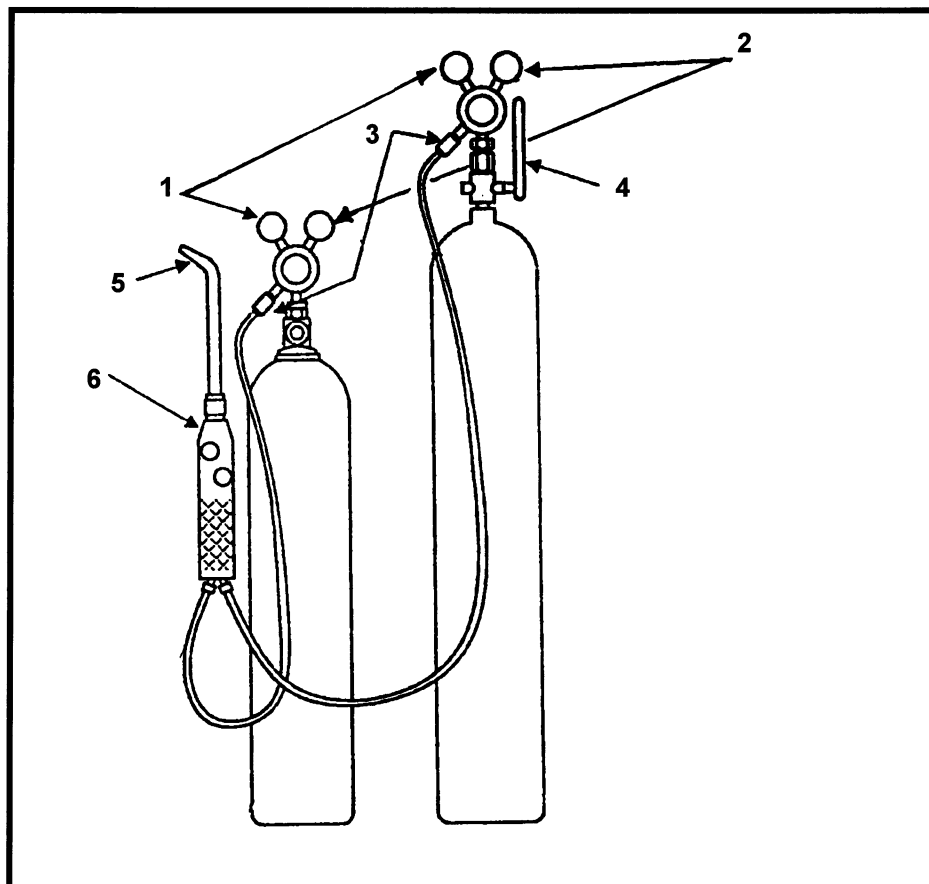
6.6 Noem TWEE veiligheidsmaatreëls wat jy in gedagte sal moet hou as jy hierdie instrument gebruik.

(2)

[20]

VRAAG 7

Die onderstaande diagram toon die oksiasetileen-sweistoestel.

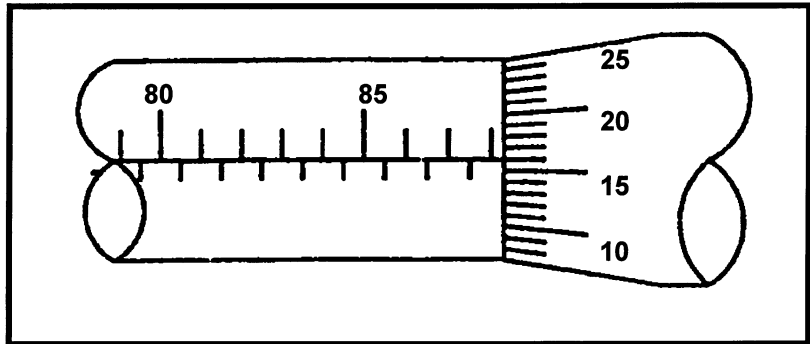


7.1 Benoem die onderdele wat 1 – 6 genommer is.

(6)

- 6.4 The diagram below shows readings obtained while using this instrument.
Calculate the reading under the following headings:

- 6.4.1 Major division
6.4.2 Minor division
6.4.3 Thimble division
6.4.4 Reading



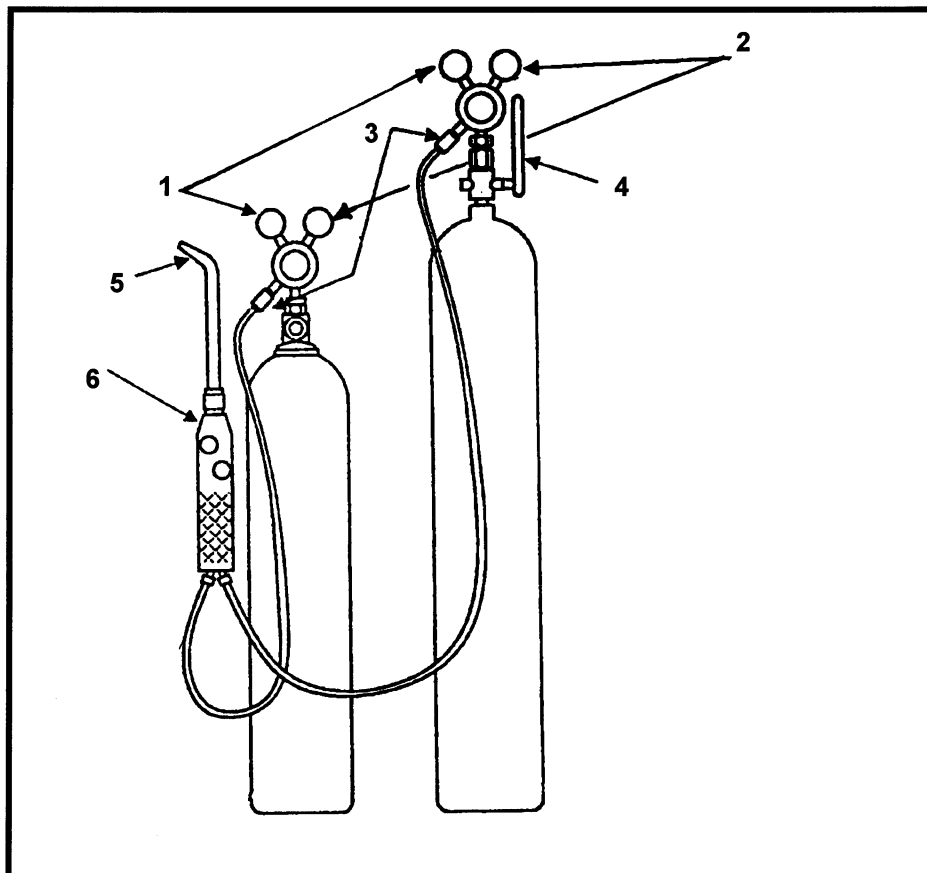
(4)

- 6.5 Explain how you would test this instrument for accuracy. (3)
- 6.6 List TWO safety precautions you would observe when using this instrument. (2)

[20]

QUESTION 7

The diagram shows the oxyacetylene welding outfit.



- 7.1 Label the parts numbered 1 – 6.

(6)

7.2 Kies die korrekte antwoord uit die lys moontlikhede (**A – D**) wat in Vrae 7.2.1 tot 7.2.12 voorsien word. Skryf **net die letter** wat die korrekte antwoord verteenwoordig teenoor die vraagnommer in jou antwoordboek neer.

7.2.1 Die hoek van die spuitstuk teenoor die werk in oksiasetileen-sweiswerk in die linkswaartse tegniek in die plat posisie, is in die bestek van _____ .

- A. 10 tot 20°
- B. 20 tot 30°
- C. 30 tot 40°
- D. 60 tot 70°

7.2.2 Suurstof word in silinders verskaf wat _____ geverf is.

- A. blou
- B. rooi
- C. maroen
- D. swart

7.2.3 Die grootte van die vuldraad-diameter om 1,6 mm dik laekoolstof-staal te sweis, is _____ .

- A. 1.6 mm
- B. 2.4 mm
- C. 3.2 mm
- D. 4.0 mm

7.2.4 Die vlamverstelling wat vir die smeltsweis van laekoolstof-staal met die oksiasetileen-proses gebruik word, is _____ .

- A. oksiderend
- B. karborerend
- C. neutraal
- D. normaliserend

7.2.5 Die suurstofslang aan die brander in oksiasetileen-sweiswerk se kleur is _____ .

- A. rooi
- B. blou
- C. groen
- D. swart

7.2.6 Gasdruk wat by oksiasetileen-sweiswerk gebruik word, word gemeet in ____ .

- A. newton
- B. bar
- C. gram
- D. ton

7.2 Choose the correct answer from the list of possibilities provided (A – D) in Questions 7.2.1 to 7.2.12. Write down **only the letter** representing the correct answer next to each question number in your answer book.

7.2.1 The angle of the nozzle to the work when oxyacetylene welding by the leftward technique in the flat position, is in the range of _____ .

- A. 10 to 20°
- B. 20 to 30°
- C. 30 to 40°
- D. 60 to 70°

7.2.2 Oxygen is supplied in cylinders which are painted _____ .

- A. blue
- B. red
- C. maroon
- D. black

7.2.3 The size of the filler wire diameter required for welding 1.6 mm low carbon steel is _____ .

- A. 1.6 mm
- B. 2.4 mm
- C. 3.2 mm
- D. 4.0 mm

7.2.4 The flame setting used for fusion welding low carbon steel by the oxyacetylene process is _____ .

- A. oxidizing
- B. carburizing
- C. neutral
- D. normalizing

7.2.5 The oxygen hose on a blowpipe for oxyacetylene welding is coloured _____ .

- A. red
- B. blue
- C. green
- D. black

7.2.6 Gas pressure used in oxyacetylene welding is measured in _____ .

- A. newton
- B. bar
- C. gram
- D. ton

7.2.7 Die hoek van die vuldraad teenoor die werk in oksiasetileen-sweiswerk in die linkswaartse tegniek in die plat posisie, is in die bestek van _____ .

- A. 10 tot 20°
- B. 20 tot 30°
- C. 30 tot 40°
- D. 60 tot 70°

7.2.8 Die eenrigting-komponent wat tussen die slang en die blaaspyp aangebring is by 'n oksiasetileen-sweistoestel, is 'n slang- _____ .

- A. verbinder
- B. reduceerder
- C. reguleerder
- D. beskermmer

7.2.9 Die hoek van die spuitstuk teenoor die werk in oksiasetileen-sweiswerk in die regswaartse tegniek in die plat posisie, is in die bestek van _____ .

- A. 10 tot 20°
- B. 20 tot 30°
- C. 30 tot 40°
- D. 60 tot 70°

7.2.10 Die beskermtoerusting wat gedra moet word tydens oksiasetileen-sweiswerk, is _____ .

- A. leerkleding
- B. handskoene
- C. sweisbril/-helm
- D. Al die bogenoemdes.

7.2.11 Die asetileenslang aan 'n spuitstuk vir oksiasetileen-sweiswerk se kleur is _____ .

- A. maroen
- B. blou
- C. groen
- D. grys

7.2.12 Suurstofpasstukke het skroefdrade wat _____ is.

- A. linksom
- B. regsom
- C. vierkantig
- D. rond

(12)

- 7.2.7 The angle of filler wire to the work when oxyacetylene welding by the leftward technique in the flat position, is in the range of _____ .
- A. 10 to 20°
 - B. 20 to 30°
 - C. 30 to 40°
 - D. 60 to 70°
- 7.2.8 The one-way component fitted between the hoses and the blowpipe in an oxyacetylene welding system is called a hose _____ .
- A. connector
 - B. reducer
 - C. regulator
 - D. protector
- 7.2.9 The angle of the nozzle to the work when oxyacetylene welding by the rightward technique in the flat position, is in the range of _____ .
- A. 10 to 20°
 - B. 20 to 30°
 - C. 30 to 40°
 - D. 60 to 70°
- 7.2.10 The protective gear required to be worn during oxyacetylene welding is _____ .
- A. leather clothing
 - B. gloves
 - C. tinted glasses
 - D. All of the above.
- 7.2.11 The acetylene hose on a blowpipe for oxyacetylene welding is coloured _____ .
- A. maroon
 - B. blue
 - C. green
 - D. grey
- 7.2.12 Oxygen fittings have threads which are _____ .
- A. left hand
 - B. right hand
 - C. square
 - D. round

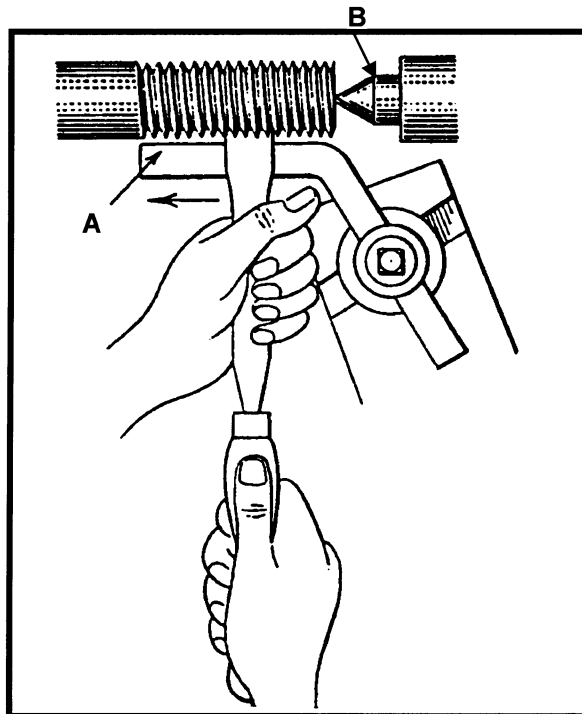
(12)

- 7.3 Gee TWEE redes waarom **terugploffing** voorkom. (2)
- 7.4 Beskryf die linkswaartse sweistegniek aan die hand van 'n eenvoudige skets. Dui ook aan watter dikte materiaal geskik sal wees vir hierdie tegniek. (5)
[25]

VRAAG 8

Die volgende drie illustrasies toon verskillende werkwinkel-praktyke. Bestudeer hulle deeglik en beantwoord die vrae wat oor elke illustrasie volg.

8.1



- 8.1.1 Watter proses word hier uitgevoer? (2)
- 8.1.2 Benoem die onderdeel gemerk **A**. (2)
- 8.1.3 Op watter komponent sal jy onderdeel **A** monteer? (2)
- 8.1.4 Benoem die onderdeel gemerk **B**. (1)
- 8.1.5 Wat sal jy doen om te verseker dat onderdeel **B** nie droog word nie? (2)
- 8.1.6 Verduidelik wat sal gebeur as onderdeel **B** tydens werking droog sou word. (1)
- 8.1.7 Wanneer onderdeel **B** op die werkstuk gesluit word, moet 'n effense toelating gemaak word. Waarom? (1)
- 8.1.8 Werk naby aan die loskop moet soms gevlak word. Met watter beitel sal jy onderdeel **B** vervang? (2)

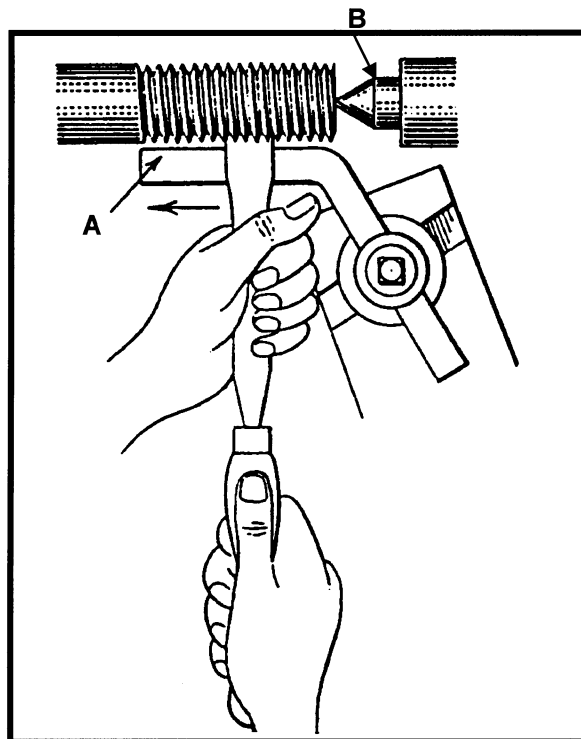
7.3 Give TWO reasons why **backfire** occurs. (2)

7.4 With the aid of a simple sketch describe the leftward technique of welding. Also indicate for what thickness of material this technique will be suitable. (5)
[25]

QUESTION 8

The following three illustrations show different workshop practices. Study these carefully and answer the questions that follow each illustration.

8.1



8.1.1 What process is being carried out? (2)

8.1.2 Name the part labelled **A**. (2)

8.1.3 On which part would you mount part **A**? (2)

8.1.4 Name the part marked **B**. (1)

8.1.5 What would you do to ensure that part **B** does not run dry? (2)

8.1.6 Explain what would happen if part **B** were allowed to run dry. (1)

8.1.7 When closing part **B** to the workpiece a slight allowance should be made. Why? (1)

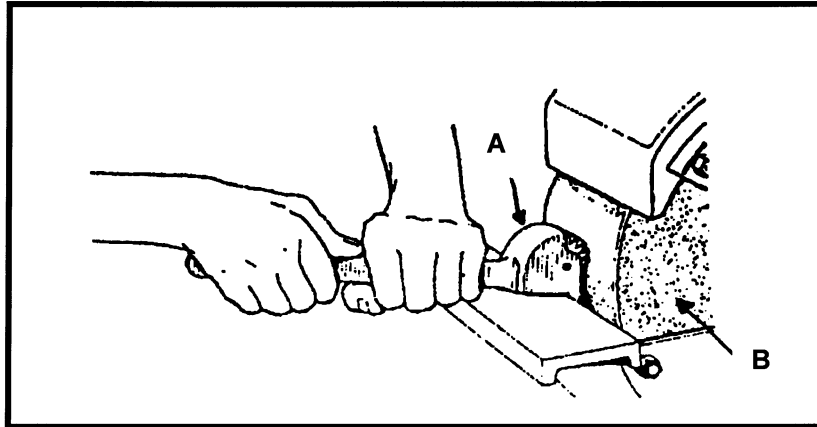
8.1.8 Sometimes work near the tailstock has to be faced. With what tool would you replace part **B**? (2)

8.1.9 Verduidelik wat jy verstaan onder die term **vaste senter**.

(2)

[15]

8.2



8.2.1 Benoem die proses wat in die skets hierbo geïllustreer word.

(2)

8.2.2 Waarom is so 'n proses nodig?

(2)

8.2.3 Benoem die onderdele wat **A** en **B** genoemmer is.

(2)

8.2.4 Gee EEN belangrike gebruik van die slypsteen.

(1)

8.2.5 Wat is die algemene reël by die keuse van slypstene?

(2)

8.2.6 Gee EEN woord vir die volgende:

(a) Wanneer metaaldeeltjies die porieë van die wiel verstop

(2)

(b) Wanneer die wiel 'n gladde, blink oppervlak ontwikkel

(2)

8.2.7 Noem TWEE belangrike veiligheidsmaatreëls wat jy sal nakom wanneer jy die slypsteen gebruik.

(2)

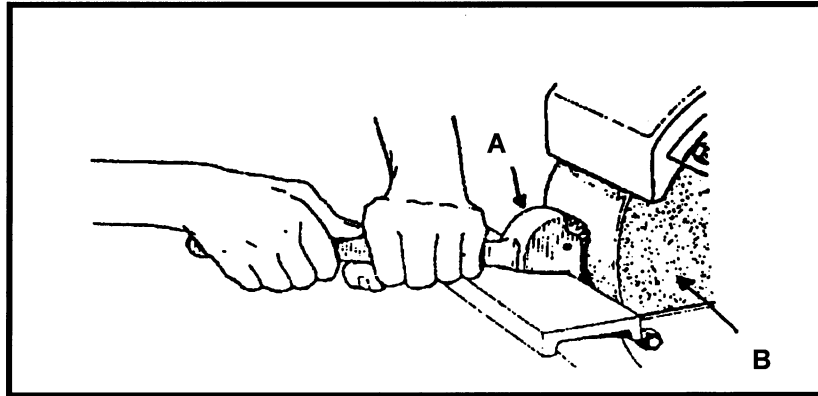
[15]

8.1.9 Explain what you understand by the term **dead centre**.

(2)

[15]

8.2



8.2.1 Name the process illustrated in the above sketch.

(2)

8.2.2 Why is such a process carried out?

(2)

8.2.3 Name the parts labelled **A** and **B**.

(2)

8.2.4 Give ONE important use of the grinding stone.

(1)

8.2.5 What is the general rule for selecting grinding wheels?

(2)

8.2.6 Give ONE word for the following:

(a) When metal particles get clogged in the pores of the wheel

(2)

(b) When the wheel develops a smooth and shining surface

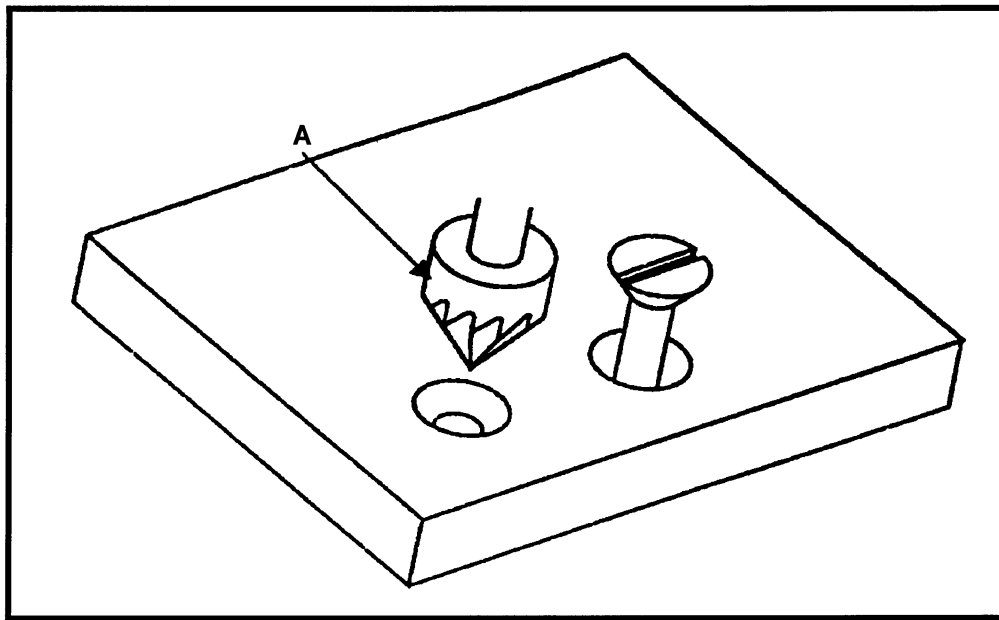
(2)

8.2.7 List TWO important safety measures you would observe when using the grinding machine.

(2)

[15]

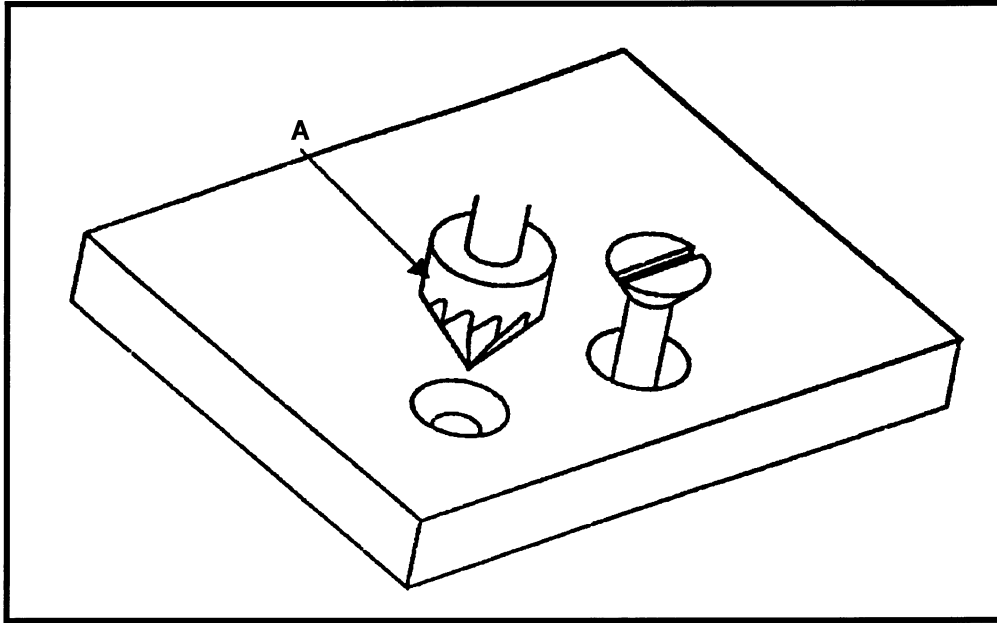
8.3



- 8.3.1 Watter proses illustreer die diagram hierbo? (2)
- 8.3.2 Benoem onderdeel A. (2)
- 8.3.3 Gee TWEE redes waarom die bostaande proses uitgevoer word. (2)
- 8.3.4 In watter masjien moet onderdeel A vasgemaak word om die proses te voltooi? (2)
- 8.3.5 Watter deel van die masjien wat in Vraag 8.3.4 geïdentifiseer is, maak dit moontlik om 'n gat van 'n spesifieke diepte te boor? (2)
- 8.3.6 Hoe sal jy verseker dat 'n gat nie skeef geboor word nie? (2)
- 8.3.7 Noem TWEE veiligheidsmaatreëls wat nagekom moet word wanneer die masjien wat in Vraag 8.3.4 geïdentifiseer is, gebruik word. (2)
- 8.3.8 Waarmee sal jy onderdeel A vervang om die kop van 'n bout te kan akkommodeer? (1)

[15]

8.3



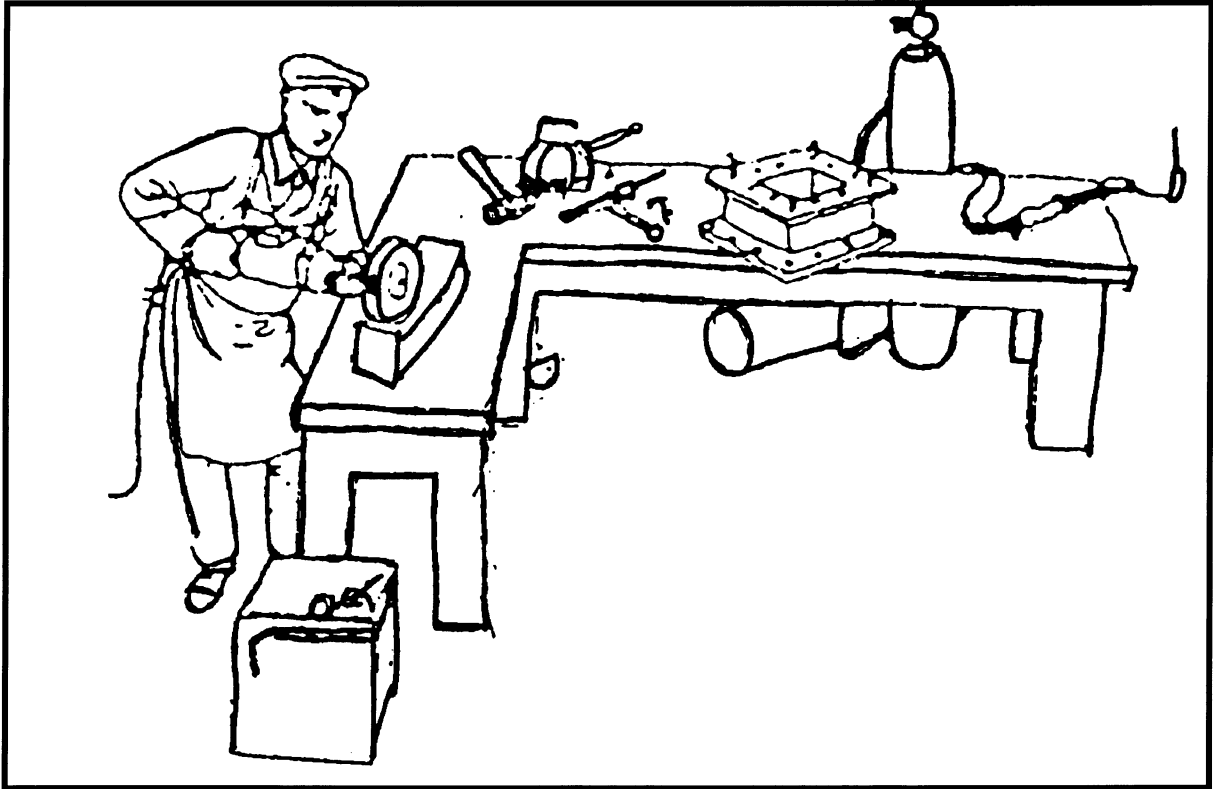
- 8.3.1 What process does the above diagram illustrate? (2)
- 8.3.2 Label part A. (2)
- 8.3.3 Give TWO reasons why the above process is carried out. (2)
- 8.3.4 To what machine must part A be attached to complete the process? (2)
- 8.3.5 What part of the machine identified in Question 8.3.4 allows a hole of a specified depth to be drilled? (2)
- 8.3.6 How would you ensure that a hole is not drilled skew? (2)
- 8.3.7 List TWO safety precautions you would observe when using the machine identified in Question 8.3.4 above. (2)
- 8.3.8 What would you use to replace part A if you were to accommodate a bolt head? (1)

[15]

VRAAG 9

- 9.1 Bestudeer die onderstaande illustrasie en skryf VYF onveilige werkswinkel-praktyke neer wat deur die werker beoefen word.

(5)



- 9.2 Jou skool het nuwe televisies en videomasjiene bekom. Die skoolhoof het die metaalwerkleerders versoek om 'n trollie vir hierdie toerusting te ontwerp. Hou in gedagte dat die trollie uit die voorraadkamer na die mediasentrum gestoot moet word wanneer die toerusting benodig word.

9.2.1 Gebruik eenvoudige sketse om jou werkstekeninge te toon.

(4)

9.2.2 Stel 'n snylys vir jou projek saam.

(4)

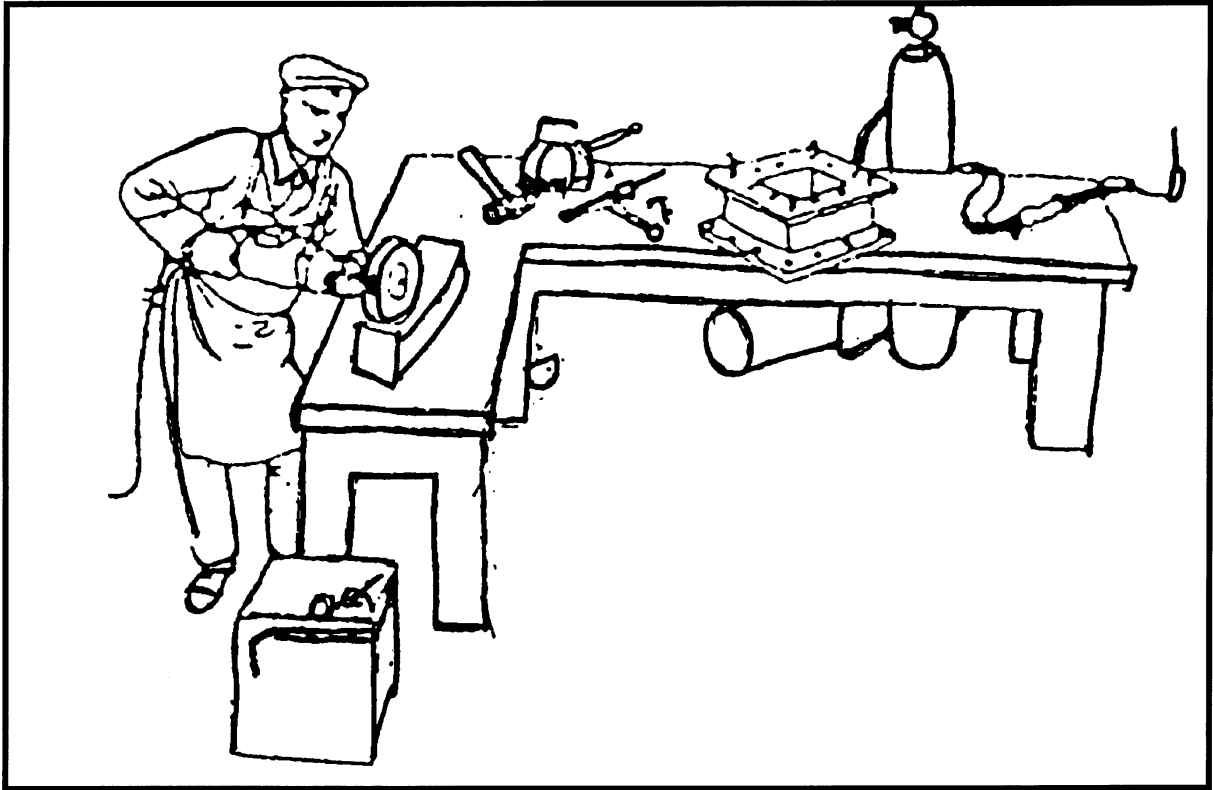
9.2.3 Watter geskikte afwerking sal jy vir jou projek gebruik?

(2)

[15]

QUESTION 9

- 9.1 Examine carefully the illustration below and write down FIVE unsafe workshop practices performed by the worker. (5)



- 9.2 Your school has acquired new televisions and video machines. The principal has asked the metalwork learners to design a trolley for this equipment. Remember that the trolley has to be moved from the stockroom to the media centre whenever the equipment is required.

- 9.2.1 Use simple sketches to show your working drawings. (4)
- 9.2.2 Compile a cutting list for your project. (4)
- 9.2.3 What suitable finish would you use on your project? (2)

[15]

VRAAG 10

- 10.1 Verduidelik baie kortliks hoe gietyster uit die koepeloond vervaardig word. (3)
- 10.2 Wat is die belangrikste verskil tussen die koepeloond en die hoogoond? (2)
- 10.3 Noem die tipe oond wat gebruik word om
- 10.3.1 weekstaal te vervaardig
- 10.3.2 ru-yster te vervaardig (2)
- 10.4 Noem die TWEE elemente waaruit geelkoper vervaardig word. (2)
- 10.5 Van watter materiaal word vliegtuie vervaardig? Gee 'n rede. (3)
- 10.6 Noem die belangrikste rede hoekom wolfram tot staal gelegeer word. (1)
- 10.7 Gee TWEE bewerkseienskappe van koper. (2)
- [15]**

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QUESTION 10

- 10.1 Explain very briefly how cast iron from the cupola furnace is manufactured. (3)
- 10.2 What is the main difference between the cupola furnace and the blast furnace? (2)
- 10.3 Name the type of furnace used to produce
- 10.3.1 mild steel
- 10.3.2 pig iron (2)
- 10.4 Name the TWO elements used to make brass. (2)
- 10.5 What material is used to manufacture aircraft? Give a reason. (3)
- 10.6 State the main reason for alloying tungsten to steel. (1)
- 10.7 Give TWO working properties of copper. (2)
- [15]**

TOTAL : 200

END