#### 719-2/2 U

## GAUTENG DEPARTMENT OF EDUCATION SENIOR CERTIFICATE EXAMINATION

METALWORK SG (Second Paper: Theory)

## POSSIBLE ANSWERS / MOONTLIKE ANTWOORDE SUPP 2007

			QUESTION 1	
1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 1.10 1.11 1.12 1.13 1.14 1.15 1.16 1.17 1.18 1.19 1.20	D D C C D B D D A A B D C D D D C B D C C B D D C C D B D C C D B D C C D B D C C D B D C C D B D C C D B D C C D B D C C D C D			201
	_		QUESTION 2	
2.1	2.1.1 2.1.2 2.1.3 2.1.4 2.1.5 2.1.6 2.1.7 2.1.8 2.1.9 2.1.10	F F T T F T F	(	10)

2.2	2.2.1	D			
	2.2.2	J			
	2.2.3	Н			
	2.2.4	F			
	2.2.5	I			
	2.2.6	С			
	2.2.7	E			
	2.2.8	G			
	2.2.9	А			
	2.2.10	В			(10)
					[20]

#### **QUESTION 3**

3.1	3.1.1	Undercutting
	242	Dlouboloo

- 3.1.2 Blowholes
- 3.1.3 Slag deposit
- 3.1.4 Porosity
- 3.1.5 Concave weld
- 3.2 Colour
  - Size
  - Thread
  - Seam
  - Gas

(5)

(8)

(2) [**20**]

(5)

- 3.3 3.3.1 Returning the metal to its original malleability by removing the carbon, e.g. aluminium
   3.3.2 Re-arranging molecules to harden, e.g. hammers
  - 3.3.3 Harden outer shell by heating in carbon and cooling, e.g. hammer head
  - 3.3.4 Process after hardening to remove brittleness, e.g. surgical instruments
- 3.4 3.4.1 Oil
  - 3.4.2 Turpentine

## **QUESTION 4**



5x2= (10)

4.2	4.2.1	А. В. С. D. Е.	Straight tool holder Straight carrier Face plate Thread cutting dial Cross slide			
	4.2.2	А. В. С.	Enlarging existing holes in a model on a me Giving a non-slip grip on tools (e.g. scriber) High speed turning	tal lathe		
		D. E.	Centring model for: 1 drilling; 2 turning Supporting long rods while cutting	(Any one)	(5) <b>(10)</b>	
					[20]	
			QUESTION 5			
5.1	Chemical c	ombinat	tion of 2 or more metals or non-metals		(2)	
5.2	<ul> <li>Lowe</li> <li>To p</li> <li>To al</li> <li>To pi</li> <li>To in</li> <li>To in</li> <li>To in</li> <li>To st</li> <li>To st</li> </ul>	er meltir roduce lter colo roduce nprove l nprove crease trengthe	ng point stronger and tougher metals our corrosion-proof metal hardness casting properties electrical resistance on the metal	Any four	(4)	
5.3	Chrome ste Cobalt stee Molybdenur Manganese Nickel Vanadium s Tungsten	eel I m steel e steel	Armour plates Lathe cutters, springs Motor engine parts – tool parts Measuring instruments – aircraft parts Engine components – stainless steel Spanners Globes - armaments	Any three	(3)	
5.4	<ul> <li>Oper</li> <li>Crus</li> <li>Float</li> <li>Float</li> <li>Sme</li> <li>Refir</li> <li>Cast</li> <li>Shar</li> </ul>	n pit mir hing an tation ce lter hing ing	ning d milling ells		(7)	
5.5	– Heat – Chei	t copper	colour		(7)	
	<ul> <li>Quench in cold water</li> </ul>					

4

5.6	<ul> <li>Affinity for tin</li> <li>Retains heat</li> <li>Heats up quickly</li> </ul>	Any one	(1) <b>[20]</b>			
	QUESTION 6					
6.1	Graphite electrodes		(1)			
6.2	Arc		(1)			
6.3	Scrap steel and cold, carbon-rich pig iron					
6.4	2 1/2 to 3 hours					
6.5	Iron oxide and oxygen					
6.6	All alloys					
6.7	<ul> <li>To produce all types of low and high-carbon st</li> <li>Temperature can be accurately regulated</li> <li>Low percentage of phosphor and sulphur conte</li> <li>Slag reduction method for effective alloy conte</li> <li>Less flux / deoxidization agents needed</li> </ul>	eels and alloys ent can be achieved nt Any four	(4)			
6.8	<ul> <li>A. Carbon electrodes</li> <li>B. Water cooled walls</li> <li>C. Water cooled roof</li> <li>D. Rotation base</li> <li>E. Tilting cylinder</li> <li>E. Lade</li> </ul>					

# F. G. H.

- Ladle Taphole Hearth

## **QUESTION 7**

7.1.1	Standard wire gauge	Measuring wire and sheetmetal thickness	
7.1.2	Thread tool and setting	Sharpening cutting tool to correct angle and	
	gauge	setting cutting tool at correct angle to workpiece	
7.1.3	Hawkbill snips (Universal)	Any shape sheetmetal	
7.1.4	Screw-thread pitch gauge	Checking thread type	
7.1.5	Chasing dial	Cutting thread on lathe accurately	1
7.1.6	Emery wheel dresser	True UP emery wheel	1
7.1.7	Micrometer	Accurate measuring up to 0,005 mm	1
7.1.8	Vernier	Accurate measuring up to 0,05 mm	
7.1.9	Half-moon stake	Shaping bottom for can or jug	
7.1.10	Independent four-jaw	Holding odd shape metal for lathe turning	1
	chuck		(10

10)

(8) **[20]** 



= 560 rpm (6)



**Rivet set** 

9.2	9.2.1		Drill press / lathe	(Any one)			
	9.2.2		Lathe				
	9.2.3		Lathe				
	9.2.4		Oxy-acetylene welding equipment		(4)		
9.3	9.3.1		Do not over-tighten				
	9.3.2		Drill must be sharp and be at the correct angle				
	9.3.3		Use pliers to hold metal		(3)		
9.4	- - -	Clean nozzle Tighten / left-hand thread Do not open too fast.			(3) <b>[20]</b>		
QUESTION 10							
10.1	- - -	ldentif Devel Organ	ication of needs opment of a design proposal ising and production				
	– Evalu		ating		(4)		
10.2	10.2.1	1	Drawings	(Anything)	(10)		
	10.2.2 10.2.3		Cutting list regarding drawings	(Anything)	(4)		
			Paint/ powder – to prevent oxidation (rust)		(2) <b>[20]</b>		
				TOTAL:	200		