higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

PLATERS' THEORY N2

16 April 2021

This marking guideline consists of 5 pages.

QUESTION 1: MACHINES

1.1 If a plate is inserted between a set of rolls and one of the rolls is moved towards the other, the plate between the rolls will bend.✓ When the rolls are rotated and the plate is passed between them, progressive bending takes place✓ and the cylinder is formed.✓ (3)

1.2 It cuts bars and sections✓ by means of a high-speed rotating blade.✓ (2)

1.3 A Drill chuck
B Work table
C Pulley guard
D Motor
E Column (5 × 1) (5)
[10]

QUESTION 2: ROLLING AND BENDING

2.1 $L = [D + T + (T \div 3)] \times \pi$
✓ ✓
$= [8515 + 8 + (8 \div 3)] \times \pi$

$= (8525.67) \times \pi$✓

$= 26784.17$ mm✓✓ (5)

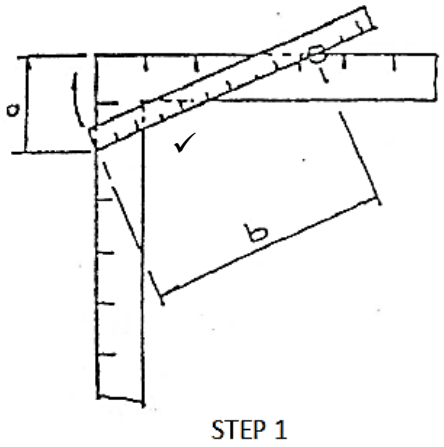
2.2 Place the buckle plate on the levelling block.✓ Before commencing to hammer the plate the position of the buckle should be carefully noted.✓ To level the plate level all strain must be removed, so that no part of the surface pulls against another.✓ The hammer blows should be hardest at the outside of the plate,✓ becoming less at the centre.✓ (5)
[10]

QUESTION 3: JOINING OF STEEL PROFILES

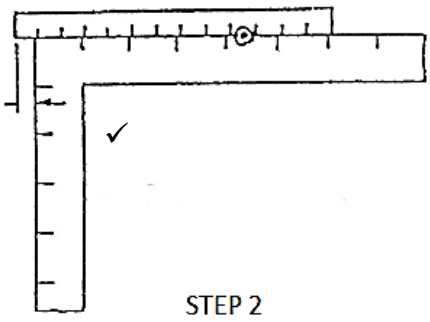
3.1
- It must be easily understood.
- It must be rigid.
- It must be light and easy to handle.
- It must be accurate.
- It must not be expensive to make.
- It must hold parts to be assembled and allow them to be easily removed from the jig. (6)

3.2
- It is dedicated to a specific product design.
- Requires a very stable and accurate product placement.
- Can be very expensive for a complex product.
- Can be impossible to use on a small product. (4)
[10]

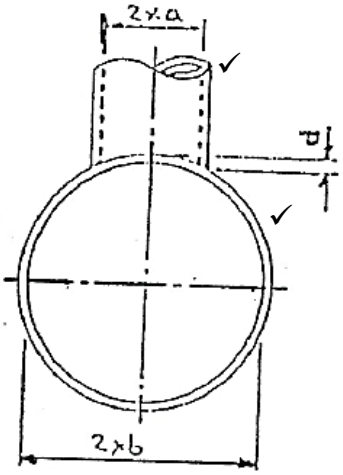
QUESTION 4: GENERAL PIPE WORK



STEP 1



STEP 2



d = saddle depth ✓

a = inside radius of small pipe ✓

b = inside radius of large pipe ✓

d = saddle depth ✓

[8]

QUESTION 5: STEEL STRUCTURES

A Purlin
B Rafter
C Tie beam
D Shoe plate
E Incline tie
F Shoe of truss **[6]**

QUESTION 6: TEMPLATES

6.1 A Template can be damaged and lost if not stored correctly
B Not always interchangeable from job to job
C Template can be damaged and lost if not stored correctly
C Material for templates not always available (4)

6.2 6.2.1 Sizing and checking.

6.2.2 Used for making patterns for repetition sheet metal components.
(2 × 1) (2)
[6]

QUESTION 7: METALS

7.1 Hardening the surface of the mild steel or low carbon steel✓ to a depth varying up to 1,5 mm.✓ (2)

7.2 Tends to increase the resistance to fatigue✓ and toughness of steel.✓ (2)

7.3 A Increases strength and toughness
B Resists high temperatures
C Good magnetic properties
D Increases heat and wear resistance (4)
[8]

QUESTION 8: GAS WELDING AND CUTTING

8.1 8.1.1
- Slow cutting speed.
- Bad gouging of lower parts of cut face.

8.1.2
- Cut edge irregular
- Excessive amount of tightly adhered dross on lower edge

8.1.3
- Uneven drag lines
- Wavy cut edge

8.1.4
- Extensive melting of the top edge
- Undercutting on top of cutting surface

8.1.5
- Regular bead along the top edge
- Kerf wider at the top edge with undercutting of face just below

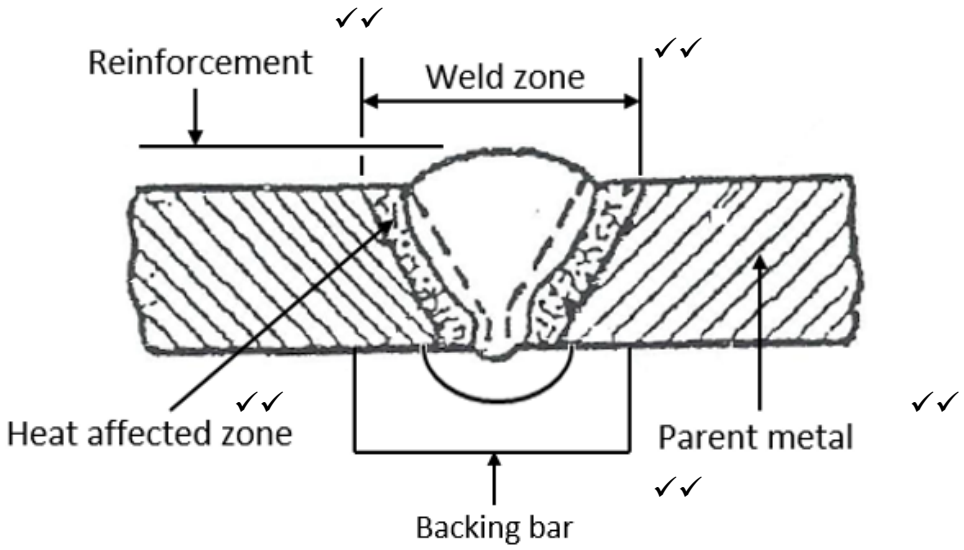
(5 × 2) (10)

8.2 During the fusion process the filler rod is melted,✓ not the parent metal. ✓ (2)

8.3 This machine is used to gas cut one or more identical items✓ and is mechanically driven.✓ (2)
[14]

QUESTION 9: ARC WELDING

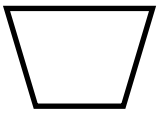
9.1



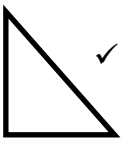
(10)

9.2 9.2.1

9.2.2



9.2.3



(3 × 1) (3)

[13]

QUESTION 10

MARK	QUANTITY	MATERIAL	LENGTH mm	Kg/m	TOTAL MASS
A	1✓	50 × 50 × 6L	0.26	4.47	1.1622✓
B	1✓	50 × 50 × 6L	0.35	4.47	1.5645✓
C	1✓	50 × 50 × 6L	0.39	4.47	1.7433✓
D	1✓	50 × 50 × 6L	0.7	4.47	3.129✓
E	1✓	50 × 50 × 6L	0.6	4.47	2.682✓
F	1✓	50 × 50 × 6L	1	4.47	4.47✓
G	2✓	60 × 50 × 6L	1.2	4.95	5.94✓
				TOTAL	20.691 kg✓

[15]

TOTAL: 100