



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE PLATERS' THEORY N2

13 April 2023

This marking guideline consists of 5 pages.

QUESTION 1: MACHINES

- 1.1 It cuts bars and sections✓ by means of a high-speed rotating blade.✓ (2)
- 1.2 A clamping beam is made up in segments of various widths✓ which can be removed or rearranged to give a clearance for a previously folded edge,✓ enabling boxes or pans to be formed.✓ (3)
- 1.3 A – Spindle lock
B – On/Off switch
C – Aluminium gear housing
D – Handle
E – Guard (5)
- [10]**

QUESTION 2: ROLLING AND BENDING

- 2.1 $L = (D + T + T \div 3) \times 3,142$
 $= (1\,800 + 6 + 6 \div 3) \times 3,142✓✓$
 $= (1\,808) \times 3,142✓$
 $= 5\,680,736\text{ mm}✓✓$ (5)
- 2.2 Place the buckled plate on a levelling block.✓ Before commencing to hammer the plate, the position of the buckle should be carefully noted.✓ To bring the plate level, all strain must be removed so that not one part of the surface shall be pulling against another.✓
- The hammer blows will need to be thickest at the outside of the plate, running away to nothing at the centre.✓ When the hammer alone is used, greater care must be taken so that its face edges shall not cut into the plate.✓ (5)
- [10]**

QUESTION 3: JOINING OF STEEL SECTION

- 3.1 The main object bracing a structure is to counteract movement✓ in any direction due to any condition of loading.✓ (2)
- 3.2 A jig is a device used for the attachment,✓ securement,✓ and correct alignment of parts.✓ (3)

- 3.3
- Assembled items are identical
 - Assembly time is reduced
 - Workers can do the work alone
 - Enables untrained workers to do the work
 - Reduces the cost of production
 - Saves unnecessary measuring
 - Jig can be stored for long periods of time and used again
 - Reduces distortion
- (Any 5 × 1) (5)
[10]

QUESTION 4: GENERAL PIPE WORK

- 4.1
- A – 45° side
 - B – Protractor
 - C – Square head
 - D – 90° side
 - E – Centre head
 - F – Revolving turret / Angular graduated scale
- (6)
- 4.2 It is a tool used to lay out pipe✓ and structural steel joints.✓ (2)
[8]

QUESTION 5: STEEL STRUCTURE

- 5.1.1 The eave or overhang of a roof truss is the extension of the rafter of a truss beyond the bearing wall.
- 5.1.2 The heel of a roof truss is the point where the rafter and the tie beam meet.
Pratt truss
- 5.1.3 The heel height of a truss is the thickness of the truss, measured from the underside of the tie beam to the intersection of a vertical line that extends up the outside of the wall and the top of the rafter. (3 × 2)
[6]

QUESTION 6: TEMPLATES

- Drawing number
 - Job number
 - Item number
 - Size of the holes
 - Number off
 - T.S.U
 - O.S.U
 - Material size
 - Cutting instructions
 - Bending Instructions
- (Any 6 × 1) **[6]**

QUESTION 7: METALS

7.1 7.1.1 Annealing is done by slowly heating the steel to a temperature slightly above its critical temperature.✓ The steel is then left at that temperature to 'soak' for a short time✓ before being allowed to cool down, very slowly, inside the furnace.✓

7.1.2 The steel is heated in its hardened state to a suitable tempering temperature, which is lower than that for hardening.✓ The steel is then quenched in water or oil.✓ The tempering temperature depends on the carbon content of the steel and the purpose for which the steel is going to be used.✓

(2 × 3) (6)

- 7.2 • Ferrous metal: Metal containing iron
• Non-ferrous metal: Metals that do not contain iron

(2)
[8]

QUESTION 8: GAS WELDING AND CUTTING

- 8.1 8.1.1 • Cut edge irregular
• Rounded top edge with melted metal falling in the kerf

- 8.1.2 • Uneven drag lines
• Wavy cut edge

- 8.1.3 • Extensive melting of top ridge
• Undercutting on top of cutting surface

- 8.1.4 • Slow cutting speed
• Bad gouging of lower part of cut face

(4 × 2) (8)

8.2 This is a simple, light-weight, portable oxy-fuel gas machine.✓ The machine can make long cuts✓ and runs on an aluminium track✓ and when fitted with a radius bar, it can cut circles.✓

(4)
[12]

QUESTION 9: ARC WELDING

- 9.1 • Cracks
• Porosity
• Undercut
• Slag inclusion
• Spatters
• Incomplete penetration

(6)

QUESTION 10: CALCULATION AND PLANNING

TOTAL: 100