higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

PLATERS' THEORY N2

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This marking guideline consists of 5 pages.

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QUESTION 1: MACHINES

1.1 A bottom cutting blade fixed horizontally, and a top cutting blade member inclined to it and fixed to the moving beam,✓ working in slides, move parallel,✓ with the result that plates are cut.✓ (3)

1.2 Bending rolls are essential in curved work✓ especially of cylindrical form.✓ (2)

1.3 A: Elevator motor
B: Spindle motor
C: Arm
D: Column
E: Base (5 × 1) (5)
[10]

QUESTION 2: ROLLING AND BENDING

2.1 The machine has three rolls arranged in a pyramid formation.✓ The bottom rolls, usually driven, work on the fixed centres,✓ while the top roll of large diameter is adjusted up and down to suit the metal thickness and the radius of curvature to be rolled.✓ A plate with pre-bent ends to approximately the radius required✓ is fed forward onto the rear roll and the top lowered before bending can take place.✓ (5)

2.2 A: Height
B: Width
C: Web
D: Fillet
E: Width (5 × 1) (5)
[10]

QUESTION 3: JOINING OF STEEL SECTIONS

3.1 A jig is a device used for the attachment,✓ securement✓ and correct alignment of parts.✓ (3)

3.2
- Identical assembly items
- Reduces assembly time
- Enables trained workers to work alone
- Enables untrained workers to work alone
- Saves unnecessary measuring
- Long-term storage of jigs that can be used again
- Reduces distortion
- Reduces the cost of production (7)

[10]

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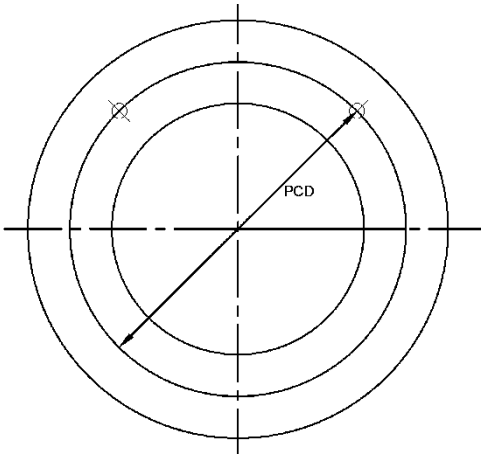
QUESTION 4: GENERAL PIPEWORK

4.1 A: Scribe
B: Spirit level
C: Locking screw
D: 45° degree side
E: Protractor/Revolving turret (5 × 1) (5)

4.2



(3)
[8]

QUESTION 5: STEEL STRUCTURES

A: King Post
B: Rafter
C: Eave / Overhang
D: Purlin Cleat
E: Strut
F: Upright (6 × 1) **[6]**

QUESTION 6: TEMPLATES

- Drawing number
- Job number
- Item number
- Hole sizes
- Number off
- T.S.U
- Material size
- O.S.U **[8]**

QUESTION 7: METALS

7.1 Ferrous metals contain iron, whilst nonferrous metals do not contain iron. (2)

7.2 7.2.1 A
7.2.2 D
7.2.3 B
7.2.4 C

(4 × 2) (8)
[10]

QUESTION 8: GAS WELDING AND CUTTING

8.1 8.1.1 Flame cleaning nozzles are used to remove mill scale, oxide and paint✓ by spreading a heating flame.✓

8.1.2 The primary function of a gas regulator is to control gas pressure.✓ It reduces the high pressure of the bottle-stored gas to the working pressure of the torch and this will be maintained during cutting.✓

(2 × 2) (4)

8.2 This is a simple lightweight portable oxy-fuel gas cutting machine.✓ The machine can make long cuts✓ and runs on an aluminium track✓ and when fitted with a radius bar can cut circles.✓ (4)
[8]

QUESTION 9: ARC WELDING

9.1 9.1.1 The metal deposited✓ during one pass of the electrode✓

9.1.2 The melting of filler metal and parental metal together✓ or a parental metal only, which results in coalescence between parental metals✓

9.1.3 The surface of a weld✓ seen from the side from which the weld was made✓

9.1.4 A piece of material✓ placed behind a butt or corner joint to help the welding operation but not intended to become part of weld✓

(4 × 2) (8)

9.2 An undercut is an irregular groove✓ along the toe of a weld✓ caused as a result of welding✓ (3)

9.3
- Excessive welding current
- Arc length too long
- Excessive wave
- Electrode at incorrect angle (4)

[15]

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QUESTION 10: CALCULATION AND PLANNING

Circumference = 3,142 × mean diameter
✓✓
= 3,142 × (1 580 + 20)
= 5 027,2 mm✓✓

Area of plate = Circumference × height
= 5 027,2 × 1 650✓
= 8 294 880 mm²✓
= 8,295 m²✓✓

Area of base plate = 3,142 × radius² × 2
= 3,142 × 0,79²✓ × 2
= 3,922 m²✓✓

✓ ✓
Mass of plate = (8,295 + 3,922) × 7,85 × 20
= 1 918,069 kg ✓✓ **[15]**

TOTAL: 100

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