



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

RIGGING THEORY N1

20 April 2021

This marking guideline consists of 5 pages.

QUESTION 1

- 1.1
- A Use main hoist
 - B Use hoist hook
 - C Retract boom
 - D Lower hook
 - E Raise boom
 - F Extend boom
 - G Stop
 - H Emergency stop
 - I Lower boom
 - J Use whip line
- (10 × 1) (10)
- 1.2
- Ensure the gas cylinders are upright and placed against a wall.
 - Ensure the gas cylinders are secured by using chains, a firm stand or brackets.
 - Ensure that a collar or neck ring is placed over the cylinder valves.
 - Always use a suitable trolley with chains, brackets or stands to move gas cylinders.
 - Ensure that wire, rope or slings are not used to hang or secure gas cylinders.
 - Ensure that proper straps are used to transport cylinders from one point to another.
- (Any 5 × 1) (5)
[15]

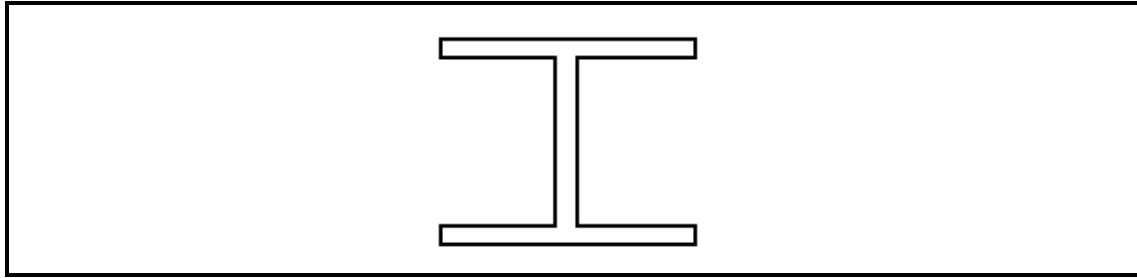
QUESTION 2

- 2.1
- 2.1.1
- A Half-round file or semicircle round file
 - B Square file
 - C Round file
 - D Flat file
 - E Triangular file
- (5)
- 2.1.2
- Half-round file is used for filing large internal round corners.
 - Square file is used for filing internal slots or rectangular holes.
 - Round file is used to file internal radii as well as to enlarge holes.
 - Flat file is used for general purpose work.
 - Triangular file is used for filing sharp internal corners.
- (5)
- 2.2
- Heat treatment is a process that changes the physical properties of a metal by heating it up and then rapidly cooling it off.
- (2)
- 2.3
- Case-hardening
 - Normalising
 - Annealing
 - Tempering
 - Hardening
- (Any 2 × 1) (2)

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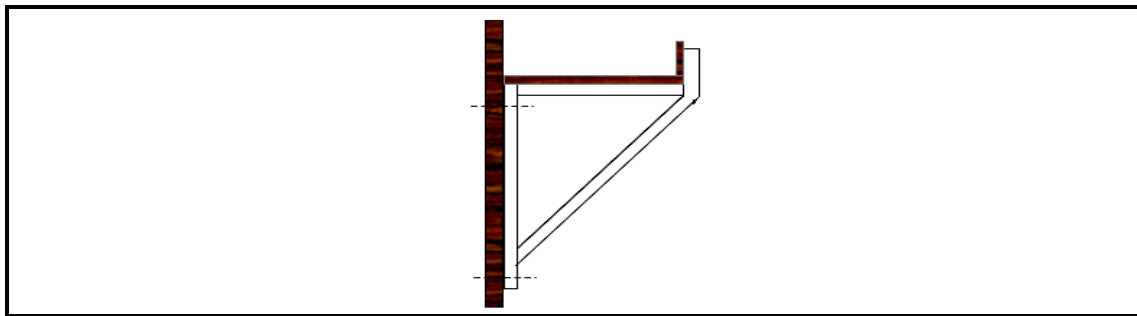
2.4

**H-BEAM**(1)
[15]**QUESTION 3**

- 3.1
- A Lateral bracing
 - B Shackles
 - C Stopper
 - D Wire ropes
 - E Winches
 - F Beam clamp
 - G Spacer or block

(7 × 1) (7)

3.2

**HOP-UP BRACKET**

(3)

- 3.3 Bruise means an injury to the wood at or near the surface caused by striking with a hammer or any other object. (2)

- 3.4
- Oil paint
 - Tar
 - Water-repellent paint
 - Phenol

(Any 3 × 1) (3)
[15]**QUESTION 4**

4.1 Distance moved in 1 hour = $2,45 \text{ km} \times 10^3 \checkmark = 2\,450 \text{ metres} \checkmark$

Distance moved in 1 minute = $\frac{2\,450}{60} \checkmark = 40,833 \text{ metres} \checkmark$

Work done to pull in 1 minute = $\frac{1,250 \times 10^5}{40,833} \checkmark = 3\,061,249 \text{ newton} \checkmark$ (6)

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- 4.2 The reel must:
- Be stored in a dry place
 - Be kept on pallets to prevent damage from humidity
 - Be kept on stands for easy rotation and lubrication of the steel wire rope
 - Not be stored on top of any hazardous substances (4)
- 4.3
- Polyester
 - Saran
 - Fibreglass
 - Nylon
 - Polypropylene
 - Poly (Any 4 × 1) (4)
- 4.4
- A visual inspection can be done to check for external corrosion on a steel wire rope.
 - Internal corrosion is very unlikely to be seen by doing a visual inspection.
 - To carry out an inspection for internal defects, a marlin spike or any other relevant tool should be used to open the rope.
 - If there are any defects internally discard the rope immediately by cutting it up. (4)
- 4.5 Lively rope is a term used to describe the tendency of a rope to uncoil itself and causing difficulty with handling. The rope uncoils itself if the serving is removed from the end. (2)
- [20]**

QUESTION 5

- 5.1
- A Synthetic web sling
 - B Double-chain sling
 - C Double steel wire sling
 - D Fibre sling (4)
- 5.2
- To protect its outer surface against wear and chafing.
 - To make the outer surface smoother and prevent other ropes from chafing when led over it.
 - To protect peoples' hands from sharp ends that are protruding from steel wire ropes. (3)
- 5.3
- Strands lifted for tucking under are not kinked.
 - Strands are not allowed to run forward but are pulled back as far as possible.
 - The rope is kept level the whole time and strands are lifted high enough for the tuck to take place.
 - The rope itself is not allowed to kink. (Any 3 × 1) (3)

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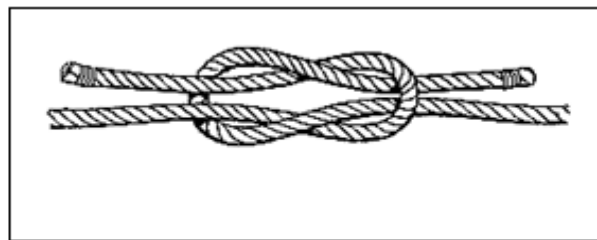
- 5.4 A Gin block
 B D-shackle
 C Crosby clamp
 D Bow shackle
 E Safety swivel hook

(5)
[15]**QUESTION 6**

- 6.1 • Becket hitch
 • Scaffold hitch
 • Rolling hitch
 • Halter hitch
 • Half-hitch
 • Blackwall hitch
 • Double-blackwall hitch
 • Clove hitch
 • Slippery hitch

(Any 5 × 1) (5)

6.2

**REEF KNOT**

(3)

- 6.3 6.3.1 Flashback arrestors are used to prevent flames from entering the hoses and the gas cylinders due to a backfire or flashback.
- 6.3.2 Gas hoses are used to deliver the gases from the gas cylinders to the torches.
- 6.3.3 Gas cylinders are used to store the gases at relatively very high pressure.

(3 × 2) (6)

- 6.4 • Gas cylinders must be stored in a well-ventilated area.
 • They must be stored separately.
 • The empty cylinders must not be stored with the full cylinders.
 • The cylinders must be kept in an upright position.
 • The cylinders must be secured with a proper chain or bracket.
 • All relevant safety signs must be mounted in the storage area.
 • Cylinders must be kept away from heat.

(Any 6 × 1) (6)

[20]

TOTAL: 100