higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

RIGGING THEORY N1

10 APRIL 2018

This marking guideline consists of 6 pages.

QUESTION 1

1.1
- The ladder must be placed in the correct way so that the feet are a quarter of its length away from the object against which it is leaning.
- The ladder must extend one metre above the support.
- The ladder should not be placed in front of doorways unless proper safety measures are put in place.
- Keep ladders in a good working condition.
- Do not use ladders as a scaffold.
- Do not use damaged ladders to carry out tasks.
- Ensure that the ladder is put at the correct angle so that it does not fall over. (Any 6 × 1) (6)

1.2
- Ensure that there are no flammable substances lying around the working area.
- Ensure that there are adequate fire extinguishers available in case of a fire. (2)

1.3
- Heat
- Gas (flammable liquid)
- Oxygen (3)

1.4
1.4.1 Safety shoes protect the feet from falling objects.
1.4.2 A safety overall protects the body from heat.
1.4.3 The safety hard hat protects the head from falling objects.
1.4.4 Safety leather gloves protect the hands from heat and sharp objects.

(4 × 1) (4)
[15]

QUESTION 2

2.1
- Large tapered spike
- Small tapered spike
- Flat spike
- Large T-needle spike
- Small T-needle spike (Any 4 × 1) (4)

2.2
- The large tapered spike is used mainly in large slings for eye and short splicing.
- The small tapered spike is used in much smaller slings for eye and short splicing.
- The flat spike is used for longer splicing.
- The large T-needle spike is used to assist in large slings or ropes during long splicing.
- The small T-needle spike is used to assist in small slings or ropes during short splicing. (Any 4 × 1) (4)

2.3 A – Square bar
B – Round bar
C – Hexagon bar (3)

2.4 2.4.1 Tempering is a process where brittleness is reduced ✓ and steel is made tougher in proportion to the amount of heat used✓.

2.4.2 Flame case-hardening is a process of hardening the surface of a metal✓ object while allowing the metal deeper inside to remain soft, thus forming a thin layer of harder metal, called the 'case', at the surface.✓

(2 × 2) (4)
[15]

QUESTION 3

3.1 3.1.1 A brace is a diagonal tie✓ to prevent the structure from collapsing and distorting.✓

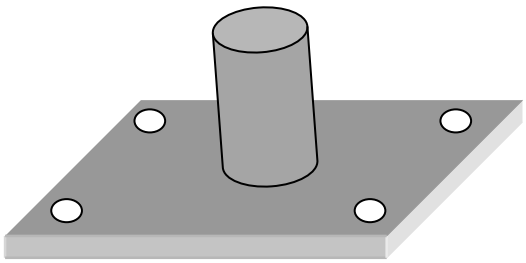
3.1.2 A bridle is a horizontal member✓ use to support two intermediate putlogs✓ that cannot be supported in the wall. Example: This is found at window openings.

3.1.3 A cradle is a frame used for supporting suspended platforms✓ or other similar scaffold. It sometimes incorporates a winch.✓

3.1.4 A guard rail is a safety rail✓ and is used for preventing a person from falling✓ off a scaffold.

(4 × 2) (8)

3.2



(2)

3.3 3.3.1 Pith rays are a tiny group of cells✓ in the structure of the wood which are sandwiched between various parts and extend in a radical direction.✓

3.3.2 Heartwood is darker✓ and consists of lifeless cells in the central area of a tree.✓

(2 × 2) (4)

3.4
- Decay or rot
- Knots
- Hollow heart
- Honey combing
- Twist (Any ONE or any relevant answer) (1)

[15]

QUESTION 4

4.1
- Missing or illegible synthetic fibre rope identification
- Acid or alkali burns
- Excessive abrasive wear
- Knots in any parts of the synthetic fibre rope
- Broken or worn in load bearing splices
- Holes, tears, cuts, snags or embedded particles in a rope
- Melting charring or weld spatter on the rope (Any 5 × 1) (5)

4.2
- The easiest and simple way to uncoil a steel rope is to unroll it from a wooden reel drum that is placed on a stand.
- The steel rope must not be slack when uncoiling to prevent the possibility of kinking or disturbance to the lay of the steel rope.
- In case the wooden reel drum is damaged, the uncoiling of the role of steel rope must be upright and rolled on the ground to prevent it from coiling. (3)

4.3
- The side of the loop is protected when the rope is withdrawn from under a load.
- Replacement can be easily made to a damaged stirrup.
- The eye bearing is protected against wear.
- The stirrup can be reeved without the additional weight and cost of reeving thimbles. (4)

4.4
- Back splice
- Point
- Becket
- Hawser eye
- Thimble eye
- Soft eye
- Knot (Any 5 × 1) (5)

4.5 Fibre covered strands (marline clad) (1)

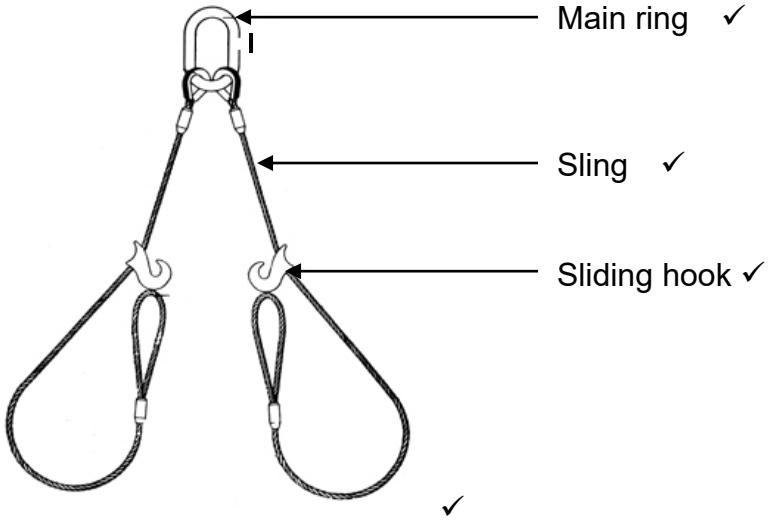
4.6
- Rope of an equal lay type
- Warrington or seals
- Seals filler wire (Any 2 × 1) (2)

[20]

QUESTION 5

5.1 A – Solid thimble
B – Crosby clamp
C – D-shackle (3)

5.2

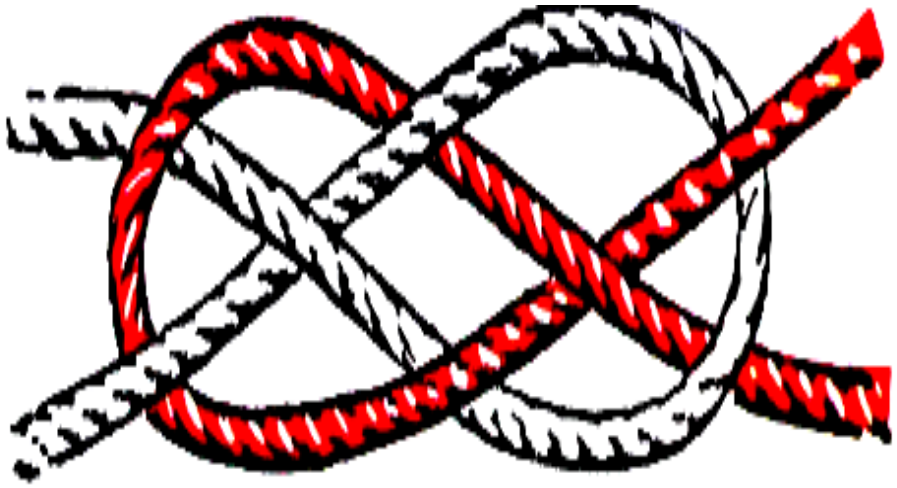


(3 marks for labels and 1 mark for drawing) (4)

5.3
- Reef knot
- Figure-of-eight knot
- Slip knot
- Heaving-line knot
- Fisherman's knot

(Any 3 × 1) (3)

5.4



(3)

5.5 A clove hitch is used to secure a rope to a spar, rail or similar fittings.✓ It is also used for many other purposes.✓ (2)
[15]

QUESTION 6

6.1 A – Hand-spliced – soft eye
B – Hand-spliced – thimble eye
C – Superloop – spliced and soft eye
D – Superloop – spliced and stirrups (half thimbles)
E – Afgrip spliced – soft eye (5)

6.2
- Flat-wire roll slings
- Canvas slings
- Nylon rib canvas slings (Any 2 × 1) (2)

6.3 The double-spliced endless sling is joined by two short splices. The parts of the double-part endless sling are brought together and thimbles are seized at the ends. The double-part spliced endless sling can bear heavy loads. (2)

6.4 6.4.1 Gas cylinders are made of steel according to specifications so that they can store gases at a very high pressure.

6.4.2 Gas hoses must be SABS-approved so that they can transport gases from the cylinders to the necessary component.

6.4.3 Flashback arresters are also SABS-approved so that they can prevent any flames from going backwards into the pipes or cylinders.

(3 × 2) (6)

6.5
- Close the valves on the torch.
- Close the cylinder valves on the cylinder.
- Open the valves on the torch to purge the gases in the hoses until the gauges go to zero.
- Release the regulator knobs on the regulator.
- Dismantle and store away in an appropriate place. (5)

[20]

TOTAL: 100