higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

RIGGING THEORY N1

3 AUGUST 2018

This marking guideline consists of 6 pages.

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QUESTION 1

1.1
- Ensure that there are no open wires in the electrical equipment.
- Check if the equipment has an emergency switch.
- Do not wear any jewelry which can be a hazard when working with electrical equipment.
- Inspect the equipment for any defects before using it.
- Ensure that plugs and connectors are properly earthed.
- Ensure that the relevant safety equipment is worn before using the electrical equipment. (Any FIVE or any relevant answer) (5)

1.2 The chisels are grounded concave so that it can be maneuverable and also protects the corners. (2)

1.3
- The safety belt must be securely fastened around the waist.
- The tail line must be securely fastened to a secured structure.
- Safety belts are essential for any off-ground work.
- Ensure the tail line must be free from obstruction and sharp edges.
- The tail line must not be fastened below, it must be fastened above the length of the person's body. (Any FOUR or any relevant answer) (4)

1.4 Horseplay is when a person is fooling around with other employees in the workshop, premises or the environment. (2)

1.5 The purpose of wearing safety goggles is to protect the eyes from any sharp objects, sparks and dust particles that is in the atmosphere. (2)
[15]

QUESTION 2

2.1
- Fencing pliers
- Side cutters
- Vice grips
- Inside and outside circlip pliers (4)

2.2
- Fencing pliers: They're wire cutters for different gauges of wire, open the handles, and put the wire to be cut in the slot and then squeeze. It is used also to tighten wires by twisting the wires.
- Side cutters are used to cut the wire by squeezing the handles.
- Vice grips are basically a pair of locking pliers. You can grasp on to things that are normally difficult to grasp, and give you more power than your bare hands of other tools.
- Inside and outside circlip pliers is used to insert or remove circlips from a component. (4)

2.3 A – Flat bar or flat plate
B – Angle iron
C – Pipe (3)

2.4 2.4.1 Normalising is a process where the steel is heated to a temperature between 49 °C to 99 °C below the annealing temperature and then allowed to cool in still air.

2.4.2 Heating is a process where the steel is heated in the furnaces which must be evenly heated until it is thoroughly heated and then brought to the correct temperature as quick as possible.

(2 × 2) (4)
[15]

QUESTION 3

3.1
- NO scaffolding must be constructed partly or dismantled partly.
- NO scaffolding must be left in an unsafe condition.
- NO scaffolding must be moved or altered while work is in progress.
- NO parts of scaffolding must be removed without the authority of a responsible person. (Any THREE or any relevant answer) (3)

3.2
- Steel planks are much stronger.
- Steel planks are safer to use.
- Steel planks have a nonslip surface.
- Steel planks are placed firmly on the structure and does not tilt at the ends. (4)

3.3 3.3.1 A base plate is used to distribute the load on the upright poles.

3.3.2 Rot or decay is the disintegration of the wood that is caused by a fungus.

3.3.3 Toe boards are situated on the platform of the scaffolding to prevent any material from falling.

3.3.4 Hollow heart is found in a block that is caused by rotting.

(4 × 2) (4)
[15]

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QUESTION 4

4.1
- Fibreglass
- Nylon
- Orlon
- Polyester
- Polypropylene
- Saran
- Polyethylene (Any 6 × 1) (6)

4.2
- Compared to chain slings these wire ropes are lighter and much cheaper. Wire rope is available in longer lengths than any other type of sling listed here.
- They utilise multiple strands of wire which are twisted together to form a thicker wire rope.
- There can be as many individual strands which all help to carry heavy weight within the rope.
- They cannot break easily because of its individual strands.

(Any FIVE or any relevant answer) (5)

4.3
- Eye to eye turnbuckles.
- Eye to jaw turnbuckles.
- Eye to shackle turnbuckles.
- Jaw to jaw turnbuckles.
- Hook to eye turnbuckles.
- Shackle to solid thimbles turnbuckles. (Any FIVE or any relevant answer) (5)

4.4
- The ends of the rope must be seized properly in order to prevent inner and outer strands to creep out.
- When coiling non spin ropes on the ground it should be done in a form of a figure of eight so that the turn is neither taken out nor forced into the rope.
- When reeving non spin ropes over sheaves the size of the sheave groove must not be smaller than the rope.

(Any TWO or any relevant answer 2 × 2) (4)
[20]

QUESTION 5

5.1
- Black wall hitch.
- Midshipman's hitch.
- Swab hitch.
- Clove hitch.
- Timber hitch.
- Marling hitch.
- Two-half hitch.
- Rolling hitch. (Any FOUR or any relevant answer) (5)

5.2



SHEET BEND✓✓✓ (3)

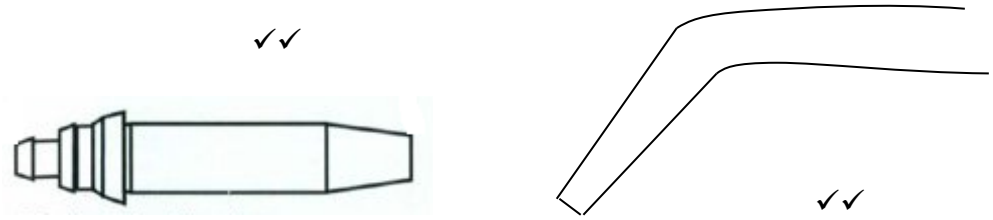
5.3 There must be three lengths of rope cut which must be approximately a metre long.✓ Wind three turns around the hand with the first length of rope.✓ Use the second rope and wrap three turns around the first length of rope.✓ Pass the third rope and wrap three turns across the second rope but inside the first rope. To finish the knot work all the ropes taut and slice the end into a standing part.✓ Alternatively, tie and overhand knot in the end and expand it tucking it inside the monkey's fist, then work all parts taut as before.✓ (5)

5.4 A – Crane hook with a locking latch.
B – Bow shackle.
C – Drop forged open socket. (3)
[15]

QUESTION 6

6.1
- Open cylinder valves on the cylinder.
- Set the working pressure gauge on the regulators by turning the regulator knob to a working pressure that is required.
- Open the acetylene valve on the torch slowly.
- Use a spark lighter and light up the torch.
- Open the oxygen valve on the torch and set the flame to a neutral flame. (5)

6.2



✓✓ ✓✓

cutting nozzle welding nozzle (4)

6.3 Maroon (1)

6.4 6.4.1 Back splice is:
- To finish the end of the rope.
- Rope that cannot be laced through a block.
- Prevent wire ends from loosening. (Any TWO) (2)

6.4.2 Eye splice is:
- To make a permanent eye.
- Found at the end of the ropes. (2)

6.4.3 Short splice is:
- To tie two fibre ropes together.
- To tie steel wire ropes together. (2)

6.5
- Chain slings are heavier than any other slings.
- Chain slings are very expensive.
- Chain slings are not easy to transport.
- Chain slings are difficult to use in confine spaces.
- Chain slings has links joined together so it is unsafe when it snaps, compared to wire rope slings that has strands.

(Any FOUR or any relevant answer) (4)
[20]

TOTAL: 100

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