higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

RIGGING THEORY N1

(11041841)

15 April 2020 (X-paper)
09:00–12:00

Calculators may be used.

This question paper consists of 7 pages and 1 formula sheet.

262Q1A2015

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
RIGGING THEORY N1
TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer all the questions.
2. Read all the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Start each question on a new page.
5. Use only black or blue pen.
6. Write neatly and legibly.

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QUESTION 1

1.1 Various options are given as possible answers to the following questions. Choose the correct answer and write only the letter (A–D) next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

1.1.1 Wearing of loose clothing will …

A cause injury to a person body.
B assist person to work more freely.
C prevent a person in getting injured.
D not be able to get hooked on any machinery.

1.1.2 Gas leaks on oxy-acetylene equipment are checked …

A by using the hands.
B by using the nose to smell.
C by using a tee-pol solution with a brush.
D by using a hazardous substance with a brush.

1.1.3 Safety harness is used when working at a minimum height of …

A 1,2 metres
B 1,5 metres
C 1,8 metres
D 3 metres

1.1.4 Electrical tools must be stored in the correct manner according to the safety requirements …

A by storing on proper shelving.
B by hanging on the cables.
C by placing on the floor.
D by storing in a hazardous substance store.

1.1.5 Horse-play is caused by …

A fooling around in the workshop.
B not wearing the relevant PPE.
C working on a machine that is not guarded.
D not walking in the demarcated walkways.

1.1.6 The component that is used to prevent the flames from entering the oxy-acetylene equipment is known as …

A gas hoses.
B gas regulators.
C flashback arrestors.
D nozzle.

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1.1.7 When working in confined spaces ensure that …

A there is insufficient lighting.
B there is insufficient ventilation.
C there is proper emergency assistance available.
D there is no person outside the area.

1.1.8 Scaffolding equipment that is defective should be …

A repaired and used again.
B kept away in the stores.
C repainted and kept away in material yard.
D cut up and thrown in the scrap bin.

1.1.9 Good housekeeping means …

A loose material in front of the access way.
B tools lying untidily on the tables.
C always a place for everything and everything in its place.
D floors that are dusty and have spillage.

1.1.10 Hand signals are very important when lifting equipment with a …

A mobile crane.
B lever hoist.
C chain block.
D fork lift.

(10 × 1) (10)

1.2 List FIVE safety precautions that must be considered when working at heights to carry out a rigging process. (5)

[15]

QUESTION 2

2.1 2.1.1 FIGURE 1 shows different types of tools used during rigging. Name the tools by writing the answer next to the letter (A–D) in the ANSWER BOOK.

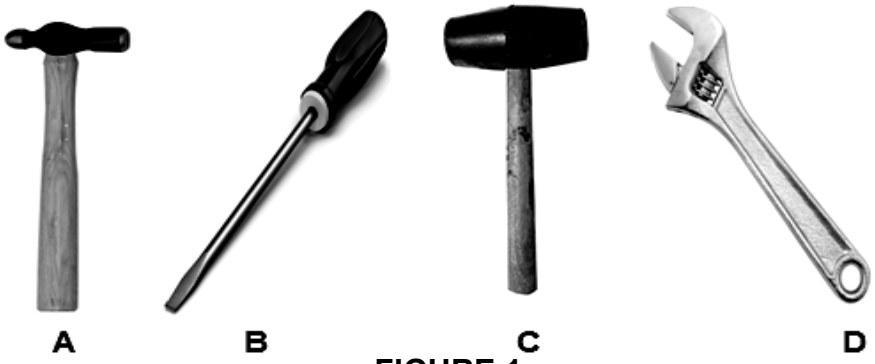

FIGURE 1

2.1.2 State ONE method how would you care for the hand tools listed in QUESTION 2.1.1. (4)

2.2 Name TWO properties of the following carbon steel metals:

2.2.1 Low-carbon steel

2.2.2 Medium carbon steel

2.2.3 High-carbon steel

(3 × 2) (6)

2.3 Draw a neat sketch of an un-equal angle iron. (1)
[15]

QUESTION 3

3.1 State ONE function of the following methods used during scaffolding.

3.1.1 Brace (1)

3.1.2 Bracket scaffold (2)

3.1.3 End check (1)

3.1.4 Guard rail (1)

3.1.5 Hop-up brackets (2)

3.2 Explain the procedure of how to assemble a Putlog scaffold. (5)

3.3 Explain how you would do a practical test on a scaffold wooden plank to check for strength. (3)
[15]

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QUESTION 4

4.1 Explain the process that is required to order a steel wire rope. (4)

4.2 Define the following terms with regard to defects on steel wire ropes:

4.2.1 Corrosion

4.2.2 Wire fatigue

(2 × 2) (4)

4.3 Name the TWO main types of fibre ropes used in rigging. (2)

4.4 List FOUR visual inspections carried out on fibre ropes. (4)

4.5 Calculate the work done in raising a beam with a weight of 520 kg from a mine that is 150 metres deep? The force of gravity is 9,81 m/s. (6)

[20]

QUESTION 5

5.1 FIGURE 2 shows how to make a Eye Splice.

List the steps in making the eye splice.

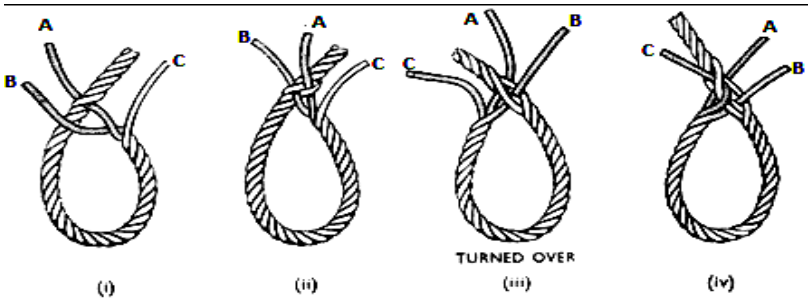

FIGURE 2 (5)

5.2 List THREE types of defects that can occur on the following types of slings.

5.2.1 Wire slings

5.2.2 Canvas slings

(2 × 3) (6)

5.3 FIGURE 3 shows different types of fittings used on slings.

Name each type of fitting used on the steel rope slings by writing the answer next to the letters (A–D) in the ANSWER BOOK.

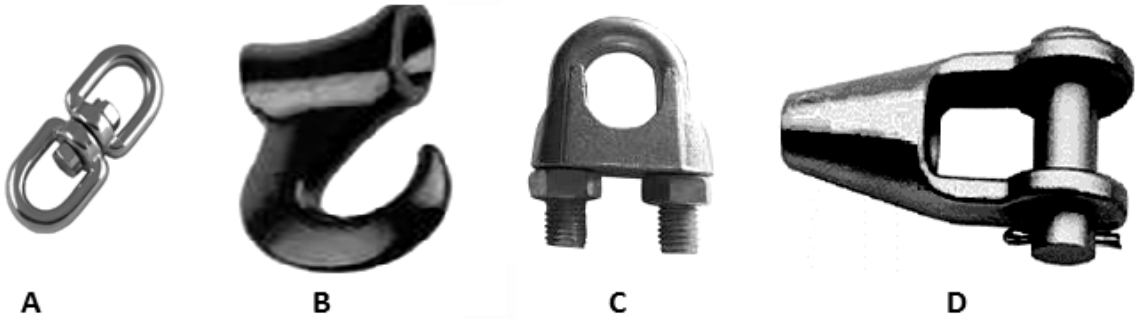

FIGURE 3

(4)
[15]

QUESTION 6

6.1 List FIVE types of knots used in ropes. (5)

6.2 Draw a neat sketch of how to tie a black-wall hitch on a hook. (3)

6.3 Explain the correct procedure of adjusting a flame on the oxy-acetylene cutting equipment to a neutral flame. (5)

6.4 Name TWO disadvantages of the oxy-acetylene process. (2)

6.5 State FOUR defects that causes backfires during the oxy-acetylene cutting process. (4)

6.6 Give ONE function of the content pressure gauge found on gas regulators. (1)
[20]

TOTAL: 100

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FORMULA SHEET

Any applicable formula may also be used:

1. $A = \pi r^2$
2. $A = \frac{1}{2.} . b . h$
3. $A = \frac{1}{4} . \pi . d^2$
4. $A = L . L$
5.. $A = l . b$
6. $f = m . g$
7. $Cos\,\theta = \frac{Adjacent}{Hypoteneuse}$
8. $Sin\ \theta = \frac{Opposite}{Hypoteneuse}$
9. $Tan\,\theta = \frac{Opposite}{Adjacent}$
10. $V = l . b . h$
11. $V = \pi r^2 . h$
12. $V = A . h$
13. $Work\ done = force \times distance$
14. $Force = mass \times gravitational\ force$

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