



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

MAINTENANCE MANAGEMENT: FARMING N4

(4090524)

28 May 2021 (X-paper)
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This question paper consists of 11 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA
NATIONAL CERTIFICATE
MAINTENANCE MANAGEMENT: FARMING N4
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. Drawing should be large, clear and neat and may be done in pencil.
 5. Use only a black or blue pen.
 6. Write neatly and legibly.
-

QUESTION 1

1.1 Various options are given as possible answers to the following questions. Choose the 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 ... is/are used in places that are inaccessible to common wrenches and are faster in removing bolts.



- A A power bar
- B An open and ring-ended spanner
- C Sockets
- D Water pump pliers

1.1.2 ... is/are also known as a universal joint and can remove nuts and bolts at an angle.

- A A swivel
- B Tinsnips
- C Engineering pliers
- D A ring spanner

1.1.3 A ... is a time-saving tool and can remove nuts and bolts without removing the socket.

- A pin punch
- B chisel
- C ratchet
- D stock die



1.1.4 A ... is used when great torque is required to loosen bolts and nuts.

- A ball-peen hammer
- B club hammer
- C power bar
- D shifting spanner

1.1.5 A ... loosens and tightens hex nuts that secure tubes such as diesel injector fuel pipes.

- A shifting spanner
- B flare-nut spanner
- C piston ring expander
- D pipe wrench



1.1.6 A ... can be used to determine the thread size of bolts.

- A valve spring compressor 
- B cylinder hone
- C piston ring compressor
- D thread gauge

1.1.7 A ... can be used to hold metal or components for welding or cutting purposes.

- A valve spring compressor
- B vice grip
- C piston ring compressor
- D piston ring expander

1.1.8 A ... is perfect for gently breaking apart components.

- A centre punch 
- B cylinder hone
- C pry bar
- D piston ring expander

1.1.9 A ... is used to remove old gasket material from a flat surface.

- A wire brush
- B chisel
- C scraper
- D screw driver

1.1.10 ... is/are used for cutting sheet metal.

- A A side cutter
- B Long-nose pliers
- C Engineering pliers
- D Tinsnips

(10 × 1) (10)

1.2 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (1.2.1–1.2.5) in the ANSWER BOOK.

1.2.1 Inspect any electrical cables for dirt, oil or grease and for any chafing or exposed wires. 

1.2.2 Apply a few drops of oil into the inlet of your air tools every day.

1.2.3 The bench grinder can grind heavy materials, but not the angle grinder.

1.2.4 Do not move the workpiece across the bench grinding wheel during use.

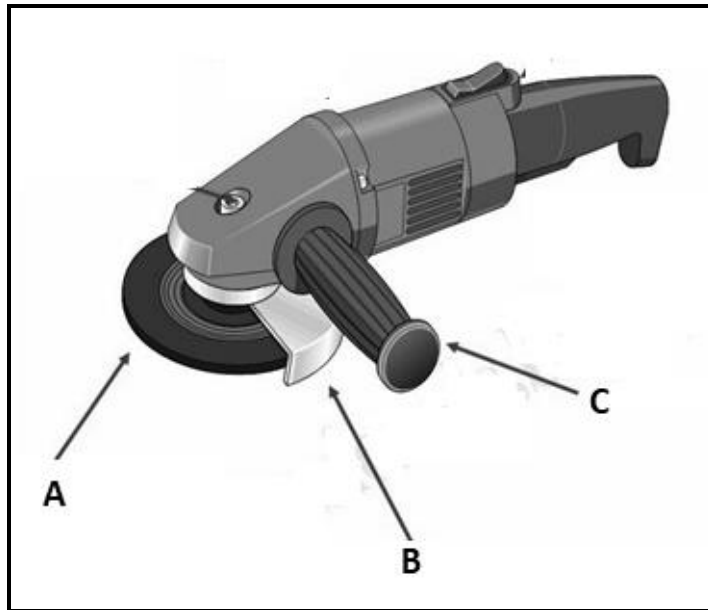
- 1.2.5 A high pitch tone (sharp ring) indicates the bench grinder stone is not broken but in good working order.



(5 × 1)

(5)

- 1.3 Answer the questions with regard to the picture.



- 1.3.1 Name the parts indicated by writing only the answer next to the letter (A–C) in the ANSWER BOOK.



(3)

- 1.3.2 Explain TWO safety rules applicable to part A.

(2)
[20]

QUESTION 2

- 2.1 Explain the function of each of the following lubrication components:

2.1.1 Oil pump

2.1.2 Oil filter

2.1.3 Oil sump



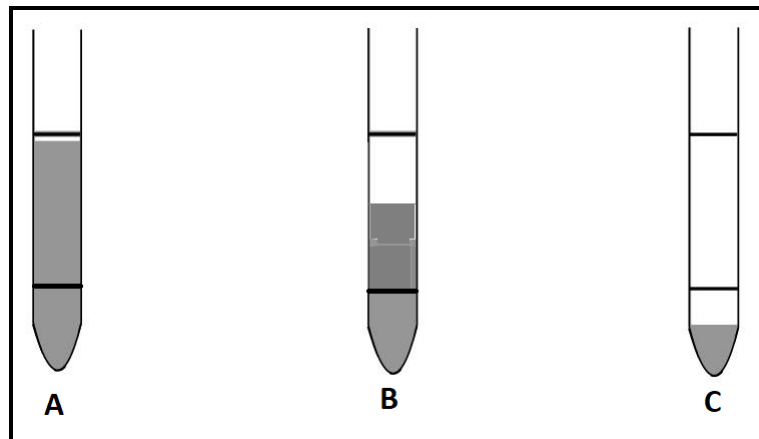
2.1.4 Oil pressure relief valve

2.1.5 Oil strainer

(5 × 2)

(10)

2.2 Answer the questions with regard to the pictures.



2.2.1 Name the instrument shown in the pictures. (1)

2.2.2 Explain the purpose of the instrument you named in QUESTION 2.2.1. (2)

2.2.3 Explain pictures A, B and C. (3 × 2) (6)

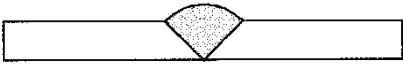
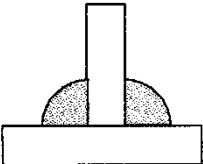
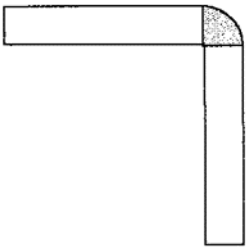
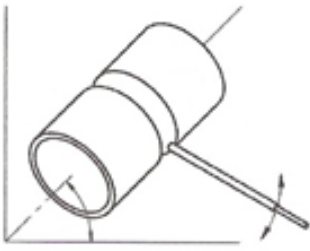
2.2.4 What does the abbreviation *API* stands for? (1)

2.3 Name THREE functions of the clutch system in a vehicle.  (3)

2.4 Name TWO types of mechanical clutch systems in a vehicle. (2)
[25]

QUESTION 3

3.1 Choose a term from COLUMN B that matches a drawing in COLUMN A. Write only the letter (A–F) next to the question number (3.1.1–3.1.6) in the ANSWER BOOK.

COLUMN A	COLUMN B
3.1.1 	A 6-G joint
3.1.2 	B Edge joint
3.1.3 	C lap joint
3.1.4 	D butt joint
3.1.5 	E T joint
3.1.6 	F corner joint

 (6 × 1) (6)

3.2 Complete the following sentences by writing only the missing word or words next to the question number (3.2.1–3.2.5) in the ANSWER BOOK.

3.2.1 The ... is the electrical spark between the tip of the electrode and the weld pool. 

3.2.2 Arc ... is the occasional fluctuating arc or unstable arc due to magnetism build-up.

- 3.2.3 Polarity is concerned with the ... current welding machine. 🏆
- 3.2.4 Metal ... is when the electrode melts during the welding process and the force of the arc projects the molten drops of metal and flux of the electrode onto the joint.
- 3.2.5 Welding electrodes are called a ... as they are used up during the welding process and new ones need to be purchased again. (5 × 1) (5)

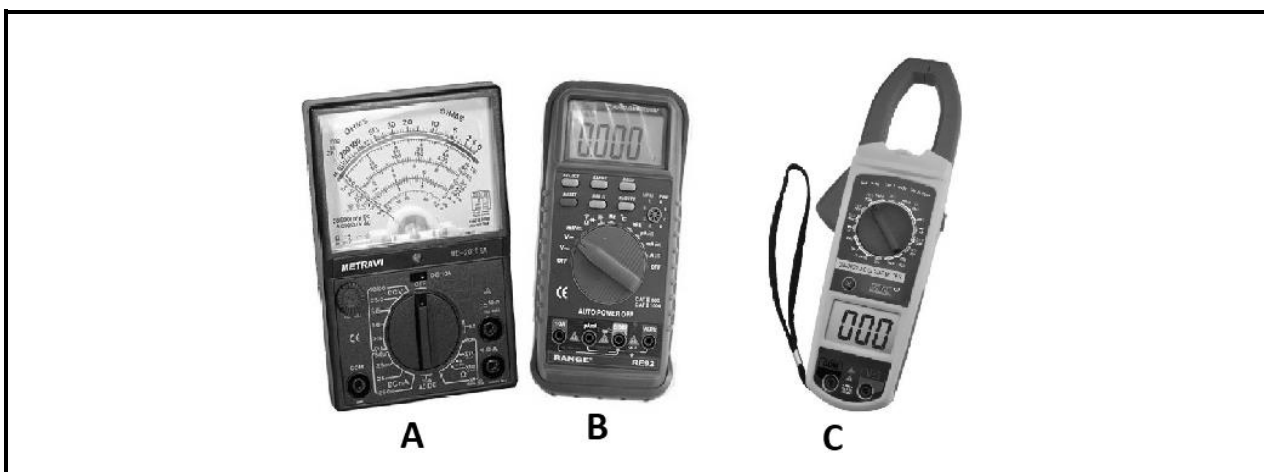
- 3.3 State FOUR advantages of a short arc during the welding process. (4)
[15]

QUESTION 4

- 4.1 State TWO fire safety precautions for each of the following:
- 4.1.1 The workshop 🏆
- 4.1.2 The farmhouse
- 4.1.3 The veld (3 × 2) (6)
- 4.2 State FOUR safety principles to apply when working with farm vehicles or equipment. (4)
[10]

QUESTION 5

Answer the questions with regard to the pictures.



- 5.1 Name instruments A–C in the pictures. (3)
- 5.2 Name THREE common electrical variables that can be measured by the instruments you mentioned in QUESTION 5.1. 🏆 (3)

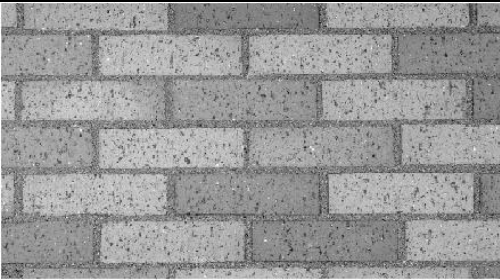
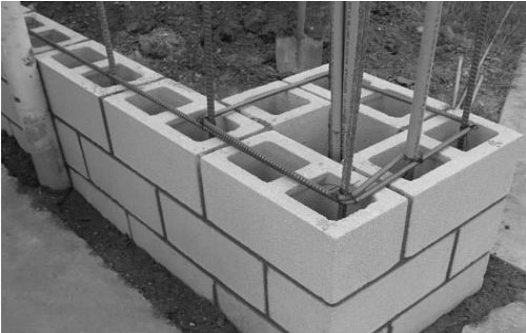
5.3 Draw an electrical circuit with a single cell, two resistors in parallel and a light bulb.



(4)
[10]

QUESTION 6

6.1 Choose a term from COLUMN B that matches a picture in COLUMN A. Write only the letter (A–F) next to the question number (6.1.1–6.1.4) in the ANSWER BOOK.

COLUMN A		COLUMN B
6.1.1		A concrete slab wall B plaster brick wall C shutter wood wall D face brick wall 
6.1.2		E concrete lintel wall F concrete block wall
6.1.3		
6.1.4		

(4 × 1) (4)

6.2 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (6.2.1–6.2.5) in the ANSWER BOOK.

6.2.1 Adequate space should be provided around buildings with livestock, for safety and firefighting purposes. 

6.2.2 The homestead should preferably be in the centre of the farming operations.

6.2.3 Buildings for a specific enterprise should be grouped together.

6.2.4 Buildings should be arranged so that storage buildings and sites for implements can be reached by a road passing near the farmhouse so heavy vehicles and tractors can reach the farmstead quickly and efficiently.

6.2.5 Where icy winter winds occur, tree shelter belts on the windward side are advisable. 

(5 × 1)

(5)

6.3 Complete the following sentences by writing only the missing word or words next to the question number (6.3.1–6.3.5) in the ANSWER BOOK.

When building in a window frame, some rules need to be applied.

6.3.1 To prevent the penetration of moisture, a ... course should be inserted below the window frame when built in the wall.

6.3.2 The external part of the sill should be ..., or better still, be provided with an asbestos cement or clay tile so that rainwater runs away from the sill. 

6.3.3 Check that the window frame is ... on both sides when building into the wall to ensure that the window frame fits correctly.

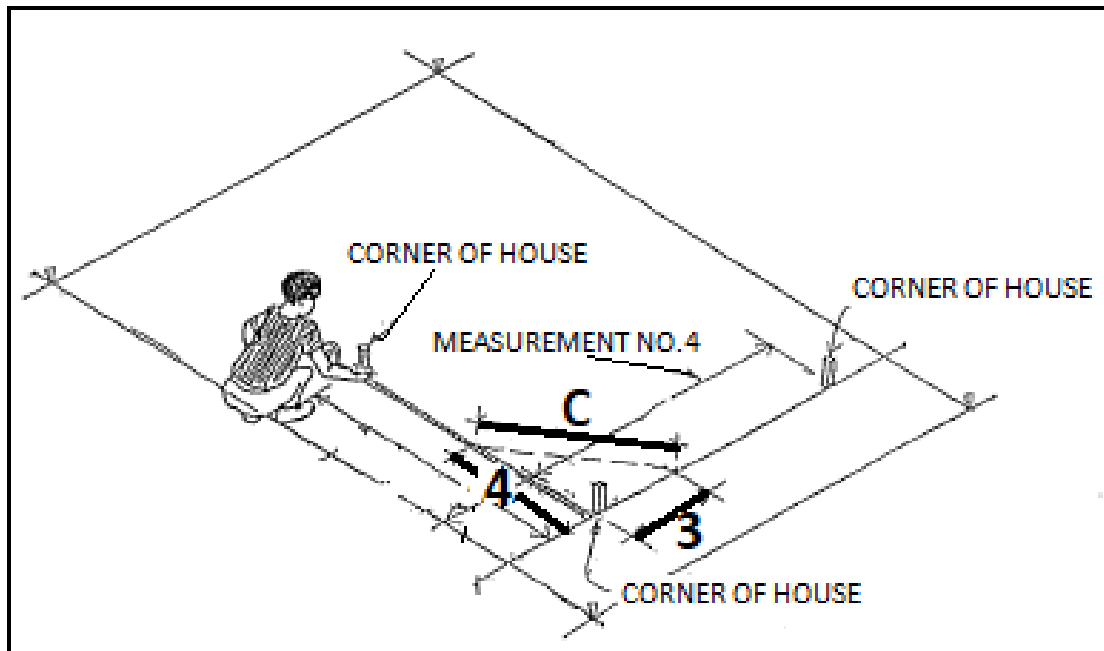
6.3.4 Keep the window frame ... with a board and nail.

6.3.5 Put ... force under the window.

(5 × 1)

(5)

6.4 Answer the questions with regard to the picture.



6.4.1 Give the distance of side C in metres.

(1)

6.4.2 When setting out the corners of a building to start digging the foundations, the builder needs to use the correct method.

Explain the correct method of setting out a rectangle, by referring to the picture.



(5)
[20]

TOTAL: 100