higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

MAINTENANCE MANAGEMENT: FARMING N4

(4090524)

19 November 2019 (X-Paper)
09:00–12:00

Nonprogrammable calculators may be used.

This question paper consists of 7 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. Sketches and diagrams should be labelled and neatly done in pencil.
5. Write neatly and legibly.

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QUESTION 1

1.1 Discuss the planning and choice of a proper workshop, with specific reference to the following:

1.1.1 Wind direction

1.1.2 Wash bay facilities

1.1.3 Safety

(3 × 3) (9)

1.2 Choose a description from COLUMN B that matches a picture in COLUMN A. Write only the letter (A–N) next to the question number (1.2.1–1.2.10) in the ANSWER BOOK.

COLUMN A	COLUMN B
1.2.1 	A to hold parts and materials
	B links the crankshaft and the camshaft
	C to drill large holes in many parts
1.2.2 	D allows the fuel/air mixture to enter the cylinder.
	E used to remove a gear from the shaft.
	F install and remove bushings, bearings
1.2.3 	G used to undo and tighten wheel nuts
	H used to safely lift heavy parts or machinery
	I uses when a car's wheels are removed
	J used to recharge a discharged battery
1.2.4 	K used on a work bench to smooth welds
	L operates pneumatic hand tools
	M can cut metal or clean metal by hand
	N used to start vehicles with discharged batteries from another charged battery

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1.2.5		
1.2.6		
1.2.7		
1.2.8		
1.2.9		
1.2.10		

(10 × 1) (10)

1.3 You need to install a new grinding stone to the bench grinder. There is only one stone available, but it looks cracked.

Name the test one will use to test whether the grinding stone is cracked or not. (1)

[20]

QUESTION 2

2.1 Make a neat, fully labelled sketch of the compression stroke of a four-stroke petrol engine and explain the compression stroke of the engine. (10)

2.2 List any FIVE parts/pieces of equipment of liquid cooling systems. (5)

2.3 Identify the part shown in FIGURE 1 and explain the purpose thereof.



FIGURE 1 (2)

2.4 Study FIGURE 2 and label the different components indicated by the alphabet letters. Write the answer next to the letter (A–G) in the ANSWER BOOK.

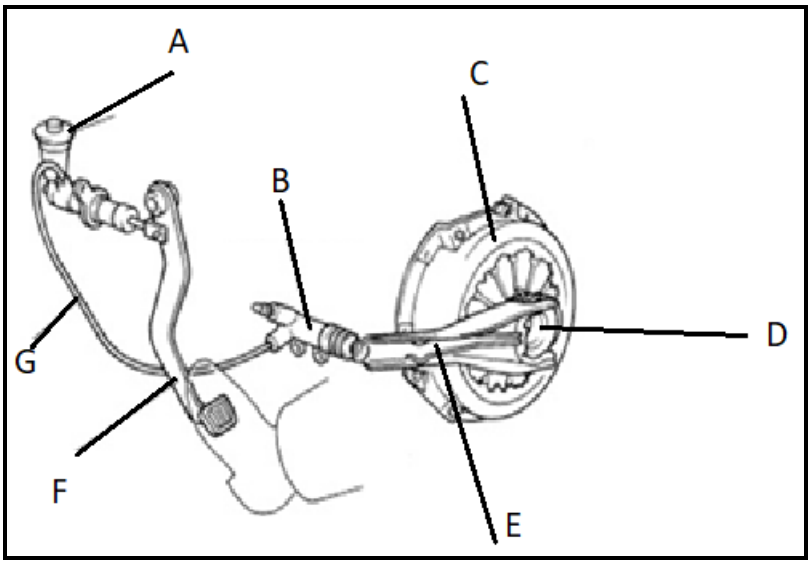

FIGURE 2 (7)

2.5 While driving your car, you experience clutch slipping.

Name ONE probable cause of the problem. (1)

[25]

QUESTION 3

3.1 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (3.1.1–3.1.10) in the ANSWER BOOK.

3.1.1 It is not expected of the employer to take sole responsibility for health and safety of workers.

3.1.2 Dangers in the workplace must be addressed by communication between employer and workers.

3.1.3 One may store oxygen and acetylene cylinders together, as long as all are empty.

3.1.4 About 10% of all veld fires started due to by human negligence.

3.1.5 Improper or a lack of maintenance of vehicles and implements can't lead to accidents.

3.1.6 Safety guards don't need to be in place when operating any piece of machinery, unless it poses a threat.

3.1.7 It is necessary to develop a system to ensure optimising operating procedures and good housekeeping for all waste generating processes.

3.1.8 Any worker appointed by the employer is allowed to work with chemicals.

3.1.9 PPE is the First Aid Act governing health and safety in the work place.

3.1.10 Good housekeeping refers to putting away tools and equipment that aren't being used.

(10 × 1) **[10]**

QUESTION 4

4.1 Make a neat labelled drawing showing the 4G code welding position. (2)

4.2 Explain the dismantling and storing of welding equipment after doing SMAW. (8)

4.3 Write the acronym *SMAW* in full. (2)

4.4 Explain the preparation of a work piece before welding takes place. (3)

[15]

QUESTION 5

5.1 Calculate the power consumption in kW if a 380 V electrical motor draws a current of 22 A. (4)

5.2 Name the working principal on which transformers operate. (1)

5.3 Make a neat drawing showing the following electrical symbols:

5.3.1 Amperage meter

5.3.2 Voltage meter

(2 × 1) (2)

5.4 Complete the following sentences by writing down the missing word or words next to the question number (5.4.1–5.4.3) in the ANSWER BOOK.

5.4.1 Current that flows through a conductor must overcome resistance all the time, thus causing a voltage … .

5.4.2 A voltmeter's internal resistance is very ..., therefore it is connected in parallel in a circuit.

5.4.3 An ammeter's internal resistance is very …, therefore it is connected in series in a circuit.

(3 × 1) (3)

[10]

QUESTION 6

6.1 Rainwater can penetrate walls if driven by wind. This can be prevented by good building practices.

Explain SIX waterproofing methods of walls or windows. (6)

6.2 Name THREE qualities of a good brick. (3)

6.3 List FOUR site limitations to avoid when planning the building of a new structure. (4)

6.4 Explain the purpose of lintels when installing windows. (2)

6.5 Make a neat drawing showing the placing of a lintel as indicated in QUESTION 6.4. (2)

6.6 Explain why floors in a new building are topped with a screed coat of 100 mm in the final stage only. (1)

6.7 Name TWO functions of fascia. (2)

[20]

TOTAL: 100

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