higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

N1000**(E)**(J13)H

NATIONAL CERTIFICATE

MAINTENANCE MANAGEMENT: FARMING N5

(4090535)

13 June 2018 (X-Paper)
09:00–12:00

Nonprogrammable calculators may be used.

This question paper consists of 8 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
MAINTENANCE MANAGEMENT: FARMING N5
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. Do sketches and diagrams neatly in pencil.
5. Write neatly and legibly.

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QUESTION 1

1.1 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

1.1.1 The piston moves downwards during the intake stroke.

1.1.2 The piston moves downwards during the compression stroke.

1.1.3 The outlet valve is closed during the exhaust stroke.

1.1.4 Around TDC, fuel is injected during the combustion stroke.

1.1.5 The intake valve is closed during the intake stroke.

1.1.6 Both inlet and outlet valves are closed during compression stroke.

1.1.7 The outlet valve is closed during intake stroke.

1.1.8 Around BBC, fuel is injected during the combustion stroke.

1.1.9 The piston moves upwards during the combustion stroke.

1.1.10 The piston moves upwards during the exhaust stroke.

(10 × 1) (10)

1.2 Study FIGURE 1 below and label the different components of the petrol ignition system. Write only the answer next to the letter (A–E) in the ANSWER BOOK. (5)

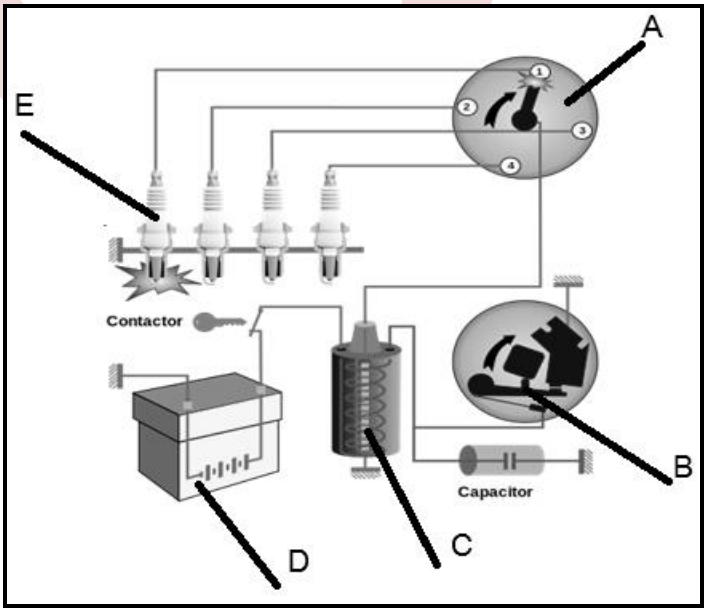

FIGURE 1

1.3 Explain TWO maintenance procedures for item D in FIGURE 1. (2)

1.4 List TWO maintenance procedures for diesel engines. (2)

1.5 Complete the following sentence by filling in the missing word(s). Write only the word(s) next to the question number (1.5) in the ANSWER BOOK.

Incorrect functioning of the diesel injectors may lead to … (1)
[20]

QUESTION 2

2.1 List TWO functions of the gearbox. (2)

2.2 Copy FIGURE 2 in the ANSWER BOOK and indicate the path of the power transfer for first gear by drawing a dark line through the applicable gears and shafts.

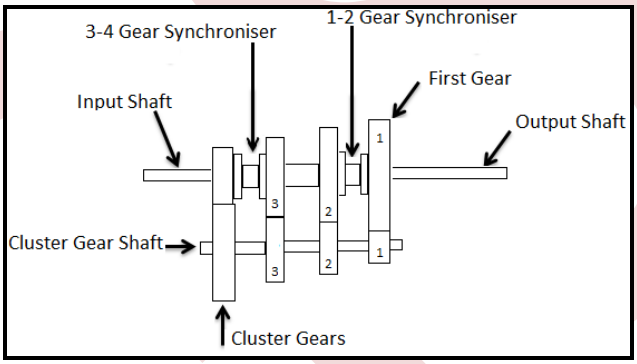

FIGURE 2 (3)

2.3 Study FIGURE 3 below and label the different tyre information (A–C). Write the answer only next to the letter (A–C) in the ANSWER BOOK.

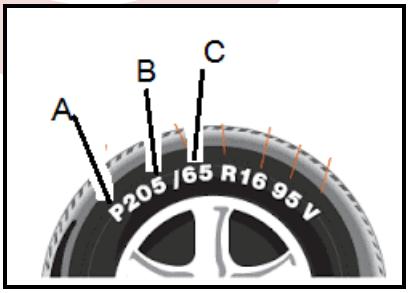

FIGURE 3 (3)

2.4 Choose a description from COLUMN B that matches an item in COLUMN A. Write only the letter (A–F) next to the question number (2.4.1–2.4.5) in the ANSWER BOOK.

COLUMN A		COLUMN B	
2.4.1	Pinion gear	A	steel shafts that transfer torque from the differential assembly to the drive wheels
2.4.2	Ring gear		
2.4.3	Side shaft gears	B	help wheels to turn independently
2.4.4	Differential case assembly	C	hold ring gear and other components that drive the rear axle
2.4.5	Rear drive axles	D	transfer power to the differential case assembly
		E	transfer power from the driveshaft to the ring gear
		F	metal body that encloses and supports parts of the rear axle assembly

(5 × 1) (5)

2.5 Explain Pascal's Law in relation to the hydraulic brake system. (5)

2.6 Explain TWO maintenance procedures for tires. (2)
[20]

QUESTION 3

3.1 Explain FIVE differences between gas welding and gas braze welding. (5 × 2) (10)

3.2 List FIVE welding defects that can occur during OAW. (5)

3.3 Make a neat, labelled drawing of a complete welding torch with all its different components and safety features. (5)
[20]

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QUESTION 4

4.1 Describe the procedure that must be followed to connect an auxiliary battery to a vehicle with a discharged battery. (5)

4.2 Study TABLE 1 below and calculate the total average maximum load in kW.

APPLIANCE	TOTAL CONNECTED LOAD IN WATT	PERCENTAGE USAGE OF THE LOAD AT A MOMENT
Lighting (all lights)	3 200	30% of the time
Stove	9 000	10%
Hot water cylinder	3 000	100%
Washing machine	3 000	15%
Additional plugs	3 500	50%
Total	21 700	

TABLE 1 (7)

4.3 The cost per unit is R1,10.

Calculate the average maximum cost for the answer in QUESTION 4.2. (1)

4.4 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (4.4.1–4.4.2) in the ANSWER BOOK.

4.4.1 Eskom is the largest producer of electricity in Africa.

4.4.2 Eskom operates Koeberg nuclear power station in the Western Cape.

(2 × 1) (2)

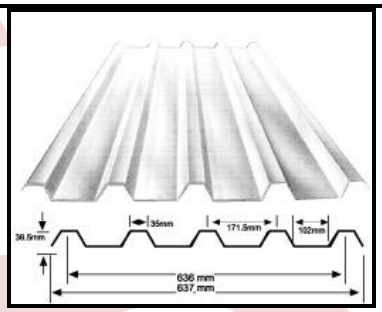
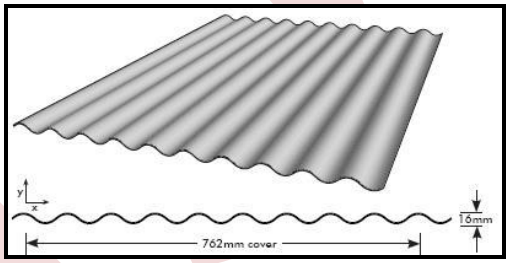
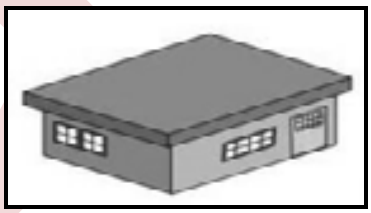
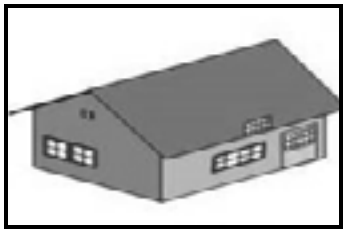
[15]

QUESTION 5

5.1 Explain the difference between single and double pitched roof constructions. Motivate your explanation with neat, labelled sketches. (5)

5.2 Explain TWO functions of a wall plate. (2)

5.3 Choose a picture from COLUMN B that matches a description in COLUMN A. Write only the letter (A–D) next to the question number (5.3.1–5.3.3) in the ANSWER BOOK.

COLUM A		COLUM B
5.3.1	Gable roof	A 
5.3.2	IBR roof sheeting	B 
5.3.3	Corrugated roof sheet	C 
		D 

(3 × 1) (3)

5.4 You need to fit plumbing pipes for the water supply to your home stead. You need to understand the minimum diameter piping to do the job. Complete the following sentences by filling in the missing words. Write only the word next to the question number (5.4.1–5.4.3) in the ANSWER BOOK.

5.4.1 The main supply pipe should be at least … mm in diameter.

5.4.2 Branch pipes shorter than 15 m should be … mm in diameter.

5.4.3 Branch pipes 15 m to 60 m should be … mm in diameter.

(3 × 1) (3)

5.5 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (5.5.1–5.5.2) in the ANSWER BOOK.

5.5.1 The three fundamental requirements for a sanitary home water supply are purity, abundance, and convenience.

5.5.2 Small animals consume on average at least 50 litres per day.

(2 × 1) (2)

5.6 Study FIGURE 5 below and label the waste-water parts. Write only the answer next to the letter (A–E) in the ANSWER BOOK.

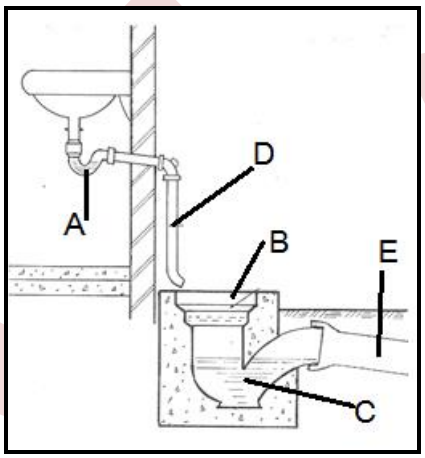


FIGURE 4 (5)

5.7 Explain the purpose of part A in FIGURE 4. (2)

5.8 Explain the purpose of part B in FIGURE 4. (2)

5.9 What should the diameter in mm be of item E in FIGURE 4? (1)

[25]

TOTAL: 100

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