



higher education
& training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

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NATIONAL CERTIFICATE

MOTOR TRADE THEORY N1

(11040651)

22 November 2018 (X-Paper)
09:00–12:00

This question paper consists of 7 pages.

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA
NATIONAL CERTIFICATE
MOTOR TRADE 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. ALL sketches must be neat and in good proportion.
 5. Answer ALL questions, including sketches, in the ANSWER BOOK.
 6. Use the correct terminology applicable to the subject.
 7. 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 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 Taking risks can be defined as ...

- A an unsafe act.
- B a time-saving act.
- C a bold/brave act.
- D a highly skilled act.

1.1.2 A fire hose can also be used for ...

- A washing car engines.
- B watering gardens within reach.
- C washing workshop floors.
- D None of the above.

1.1.3 The correct water-to-acid percentage ratio for the electrolyte in a car battery:

- A 30:70
- B 20:50
- C 40:60
- D 60:40

1.1.4 The letter S before R in tyre marking indicates that ...

- A the tyre can be used in snow.
- B the tyre can maintain a maximum speed of 180 km/h.
- C the tyre is soft.
- D the tyre is safe.

1.1.5 The reason for valve clearance is to ...

- A hear when the tappets are working.
- B ensure that the valves close fully.
- C ensure that the camshaft is free.
- D reduce the strain on the camshaft.

1.1.6 The function of the flywheel is to ...

- A serve as a mounting surface for the clutch.
- B act as a vibration damper.
- C serve as a mounting surface for the starter ring gear.
- D All of the above.

- 1.1.7 The main function of the oil filter is to ...
- A store additional oil should the sump run dry.
 - B clean the engine oil.
 - C cool the engine oil.
 - D reduce the effect of oil-pump pulsation.

- 1.1.8 This pump is NOT used as an oil pump:

- A Gear pump
- B Rotor pump
- C Vane pump
- D Impeller pump

- 1.1.9 A single-core radiator is constructed with ...

- A two rows of tubing.
- B three rows of tubing.
- C one row of tubing.
- D one large tube.

- 1.1.10 Additives are added to the cooling system to ...

- A prevent freezing or boiling of the water.
- B reduce rust and scaling.
- C A or B
- D A and B

(10 × 1) (10)

- 1.2 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (1.2.1–1.2.5) in the ANSWER BOOK.

- 1.2.1 Pneumatic tools are safer to use than electric power tools.
- 1.2.2 Cross-ply tyres are more rigid in construction than radial-ply tyres.
- 1.2.3 Diesel engines require sparkplugs to ignite the mixture.
- 1.2.4 Modern car batteries are mostly maintenance-free.
- 1.2.5 It is advisable to remove the thermostat from a cooling system.

(5 × 1) (5)
[15]

QUESTION 2

2.1 Give TWO common causes of accidents in a workshop. (2)

2.2 List THREE safety precautions to consider before working underneath a jacked-up vehicle. (3)

2.3 What are each of the following tools used for:

2.3.1 Dial test indicator

2.3.2 Hydrometer

2.3.3 Feeler gauge

2.3.4 Vernier calliper

(4 × 1) (4)

2.4 Give the meaning of each of the following safety signs:

2.4.1



2.4.2



2.4.3



2.4.4



(4 × 1) (4)

2.5 Name FOUR types of oil-filter wrenches. (4)

[17]

QUESTION 3

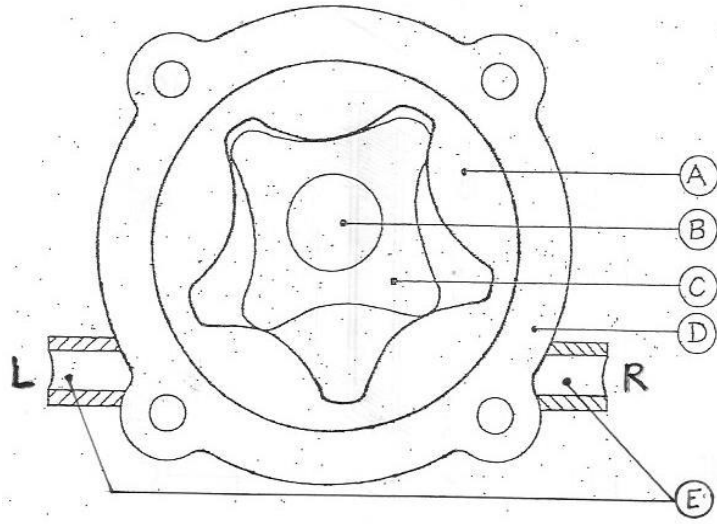
- 3.1 Give THREE advantages of a front-engine, front-wheel drive layout. (3)
- 3.2 State THREE functions of tyres. (3)
- 3.3 Explain *sulphation* as it occurs in lead-acid batteries. (5)
- 3.4 Tyres marked *directional* are fitted on quite a number of new cars.
What does this term indicate? (3)
- 3.5 High-end tyre markings include *steel belts*.
Explain this feature as part of tyre construction. (3)
- [17]**

QUESTION 4

- 4.1 List, in the correct sequence, the FOUR strokes of the Otto cycle as applied to diesel engines. (4)
- 4.2 Draw FOUR simple line sketches to represent the four strokes of a four-stroke petrol engine. Pay special attention to the position of the valves and the movement of the piston. NO written explanation is required. (4 × 3) (12)
- 4.3 Name THREE types of camshaft drive systems used on car engines. (3)
- [19]**

QUESTION 5

5.1 Study the sketch below and answer the questions.



- 5.1.1 Which type of pump is shown? (1)
- 5.1.2 Label the parts of the pump by writing the name of each part next to the letter (A–E) in the ANSWER BOOK. (5 × 1) (5)
- 5.1.3 If the pump rotates clockwise, which port will be the inlet port? (1)
- 5.2 Explain the operation of a PCV valve. (3)
- 5.3 List FIVE reasons for high oil consumption. (5)

[15]**QUESTION 6**

- 6.1 Give FOUR reasons for a clutch slipping. (4)
- 6.2 Name TWO types of pressure plates generally used in cars. (2)
- 6.3 Make a neat labelled sketch of a clutch slave cylinder. Insert at least FOUR labels. (9)
- 6.4 Give TWO advantages of a hydraulic clutch operating system. (2)

[17]**TOTAL: 100**