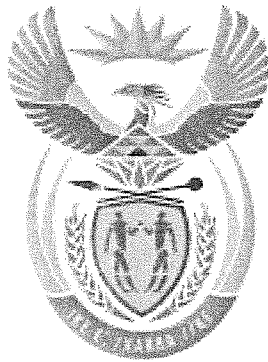


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higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

**T1130(E)(M24)T
APRIL EXAMINATION**

NATIONAL CERTIFICATE

MOTOR TRADE THEORY N1

(11040651)

**24 March 2014 (Y-Paper)
13:00–16:00**

This question paper consists of 7 pages and 4 diagram sheets.

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 provided with the necessary labels.
 5. Correct spelling and terminology is important. For example, do not use 'top' for cylinder head.
 6. Start each question on a NEW page.
 7. 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 An engine that overheats can cause...

- A engine seizure.
- B a cracked cylinder head.
- C bearing failure.
- D All the above-mentioned.

1.1.2 Tyres should be inflated to the recommended pressure when they are ...

- A carrying a load.
- B hot.
- C cold.
- D at the operating temperature.

1.1.3 The correct sequence of strokes of a two-cylinder four-stroke engine is:

- A Compression, induction, power, exhaust
- B Induction, compression, power
- C Induction, compression, power, exhaust
- D Induction, compression, power, transfer

1.1.4 The main function of the crankshaft is to ...

- A drive the clutch assembly.
- B drive the gearbox.
- C convert the reciprocating motion of the pistons to rotary motion.
- D convert the combustion pressure to mechanical power.

1.1.5 Used engine oil should be disposed of by ...

- A dumping it in an open field.
- B pouring it down the drain.
- C putting it in the rubbish bin.
- D recycling.

1.1.6 If a fire breaks out in a workshop, you should not ...

- A identify the most suitable fire extinguisher.
- B correctly operate the suitable fire extinguisher.
- C locate fire-fighting equipment and alarms in the workshop.
- D open all doors and windows.

- 1.1.7 The most accurate mechanical measuring instrument is the ...
A vernier calliper.
B micrometer.
C dial gauge.
D steel ruler.
- 1.1.8 The ... is the correct tool to loosen cylinder head bolts.
A power bar
B torque wrench
C speed brace
D ratchet
- 1.1.9 Completely removing a radiator pressure cap while an engine is hot can cause ...
A a cracked engine block.
B a blocked radiator.
C a sudden, violent burst of steam.
D warped valves.
- 1.1.10 Two 12-volt batteries connected in parallel produce:
A 12 volts
B 18 volts
C 24 volts
D 6 volts

(10 × 1) (10)

1.2 Name the special tool(s) needed in each of the following cases:

1.2.1 To tighten bolts and nuts to specific tightness

1.2.2 To cut the internal thread(s)

1.2.3 When fitting the pistons with rings into the cylinder

(3 × 1) (3)

1.3 FIGURE 1 on DIAGRAM SHEET 1 (attached) shows a sectional sketch of a piston.

Name the parts by writing each answer next to the letter (A–F) in the ANSWER BOOK.

(6)

1.4 State ONE function of an oil seal.

(1)

[20]

QUESTION 2

- 2.1 List FOUR unsafe acts that could lead to injuries in the workshop. (4)
- 2.2 FIGURE 2 on DIAGRAM SHEET 1 (attached) shows the parts of valve assembly of an engine.
Name the labelled parts (A–F) in the ANSWER BOOK. (6)
- 2.3 FIGURE 3 on DIAGRAM SHEET 2 (attached) shows a sketch of the parts of clutch set-up.
Name the labelled parts (A–G) in the ANSWER BOOK. (7)
- 2.4 State THREE functions of an engine cooling system. (3)
- [20]

QUESTION 3

- 3.1 State the FOUR strokes of a petrol engine and state what happens during each stroke. (8)
- 3.2 FIGURE 4 Diagram SHEET 2 (attached) shows a sketch of a single-plate clutch assembly.
Name the labelled parts (A–G) in the ANSWER BOOK. (7)
- 3.3 What are the following tools used for:
- 3.3.1 Ridge cutter
 - 3.3.2 Feeler gauge
 - 3.3.3 Taps and dies
 - 3.3.4 Torque wrench
 - 3.3.5 Long nose-pliers
- (5 × 1) (5)
- [20]

QUESTION 4

- 4.1 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (4.1.1–4.1.5) in the ANSWER BOOK.
- 4.1.1 Cylinder head houses the spark plugs.
- 4.1.2 Effective house keeping can increase injuries in the work shops.
- 4.1.3 During power stroke the piston moves downwards.
- 4.1.4 One of the causes of overheating is a damaged radiator cap.
- 4.1.5 One of the reason for clutch slipping is a worn out frictional lining. (5 × 1) (5)
- 4.2 State THREE functions of lubricating oil in an internal combustion engine. (3)
- 4.3 Name TWO types of crankcase ventilation systems. (2)
- 4.4 FIGURE 5 Diagram SHEET 3 (attached) shows a sectional sketch of oil pump.
- 4.4.1 Name the type of oil pump shown in FIGURE 5. (1)
- 4.4.2 Name ALL the labelled parts (A–E) in the ANSWER BOOK. (5)
- 4.5 State FOUR reasons that causes engine overheating with reference to the water-cooled system. (4)
- [20]

QUESTION 5

- 5.1 Make a simple line sketch showing how you would rotate the wheels on a motor vehicle fitted with radial ply tyres.(include the space wheel) (2)
- 5.2 State TWO adverse effect on a tyre for each of the following:
- 5.2.1 Tyre pressure too low (1)
- 5.2.2 Tyre pressure too high (1)
- 5.3 FIGURE 6 Diagram SHEET 3 (attached) shows two sketches of tyre ply constructions.
- Name the tyre type marked A and B in the ANSWER BOOK. (2)

5.4 State THREE functions of a tyre in a motor vehicle. (3)

5.5 All tyres have markings on their walls, each marking mean a different thing.

What is the meaning of the tyre marked 195/70SR14 appear on the wall. (3)

5.6 FIGURE 7 Diagram SHEET 4 (attached) shows various tools used in the workshop.

Name the tools next to the marked numbers (5.6.1–5.6.8) in the ANSWER BOOK.

(8)
[20]

TOTAL: 100

DIAGRAM SHEET 1

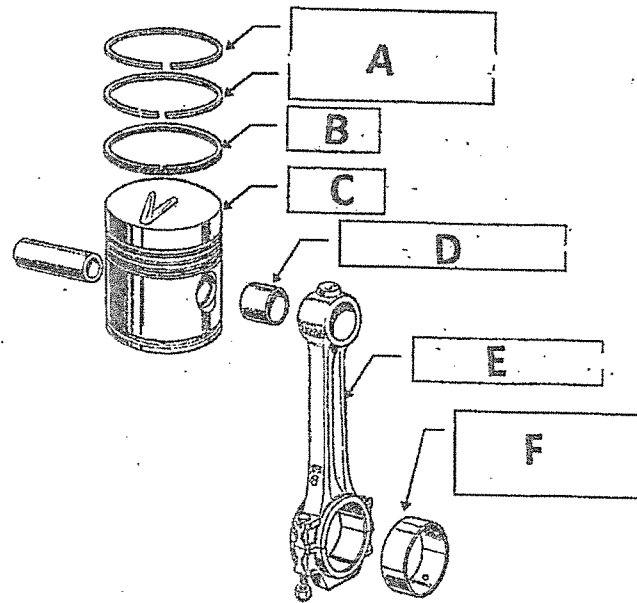


FIGURE 1

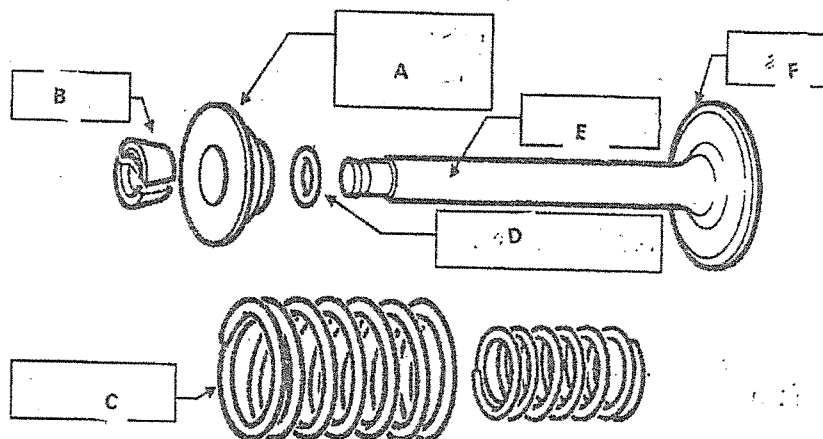


FIGURE 2

DIAGRAM SHEET 2

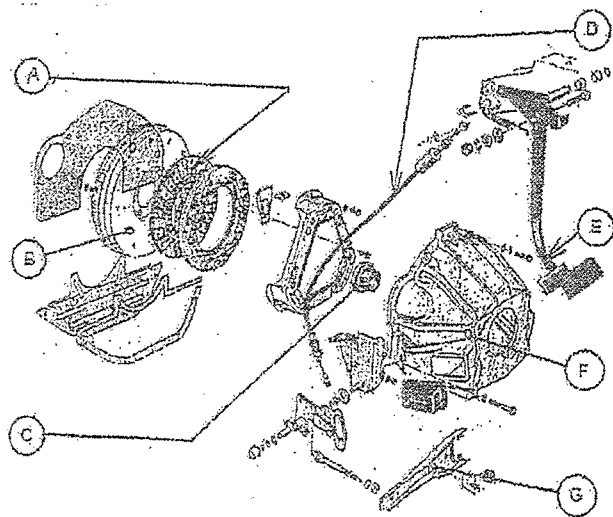


FIGURE 3

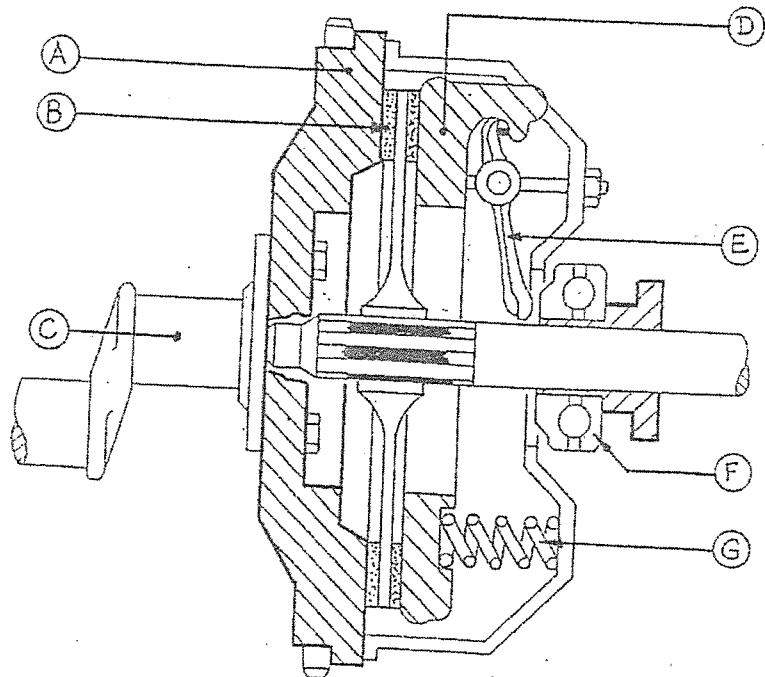


FIGURE 4

DIAGRAM SHEET 3

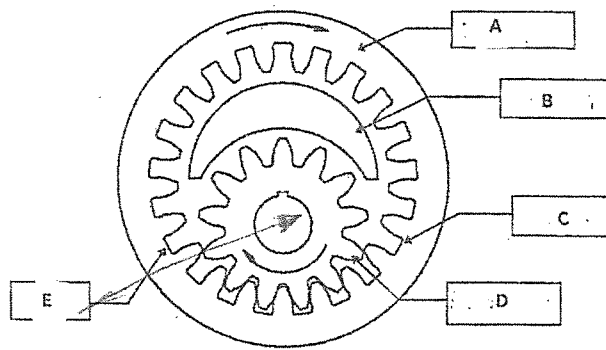


FIGURE 5

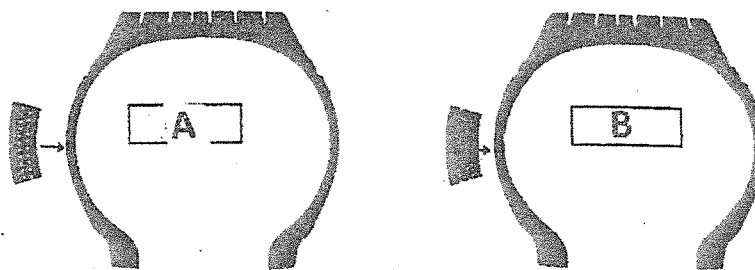


FIGURE 6

DIAGRAM SHEET 4

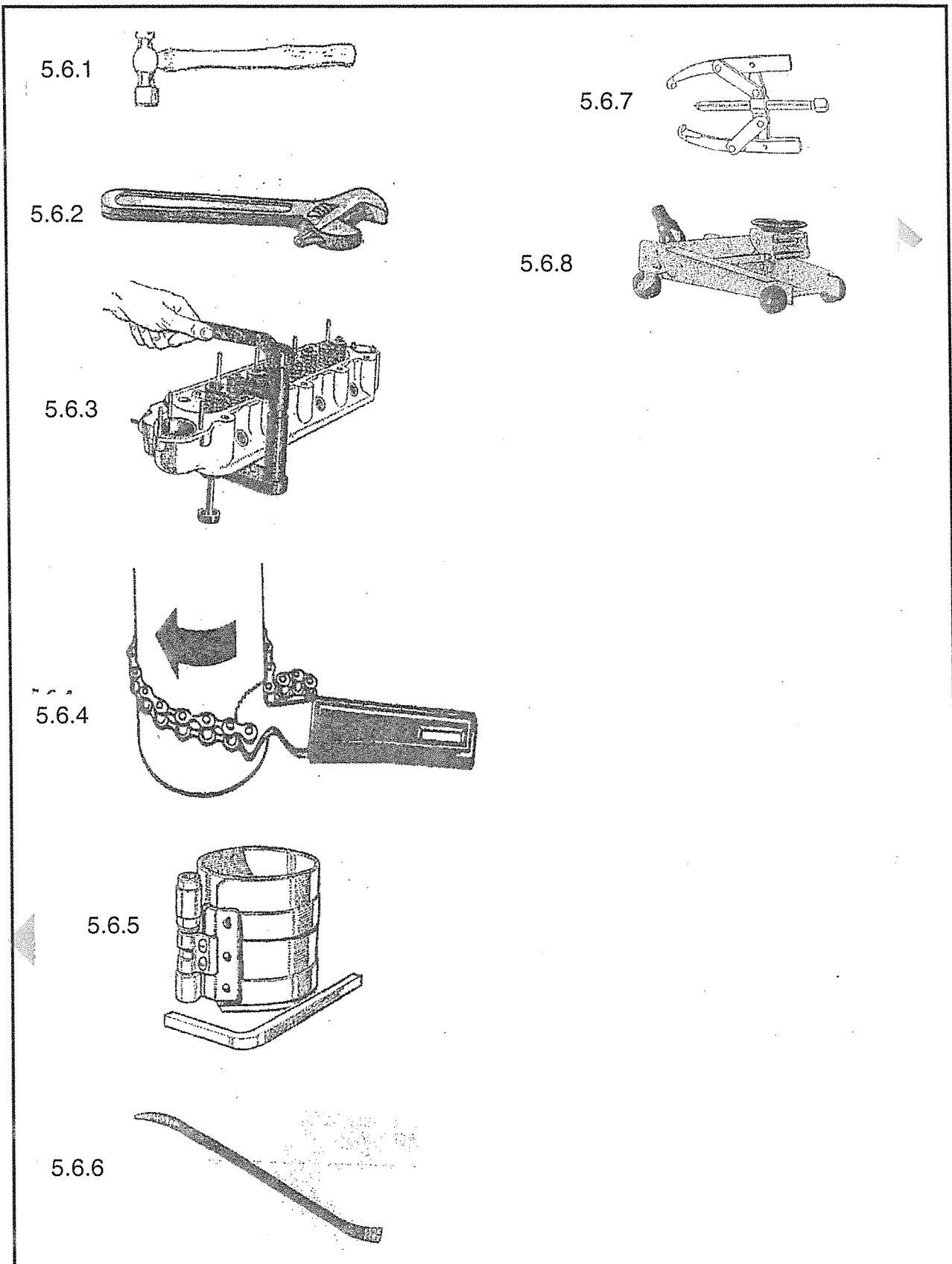


FIGURE 7