



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

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NATIONAL CERTIFICATE

MOTOR TRADE THEORY N3

(11040673)

31 July 2018 (X-Paper)
09:00–12:00

This question paper consists of 4 pages.

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA
NATIONAL CERTIFICATE
MOTOR TRADE THEORY N3
TIME: 3 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

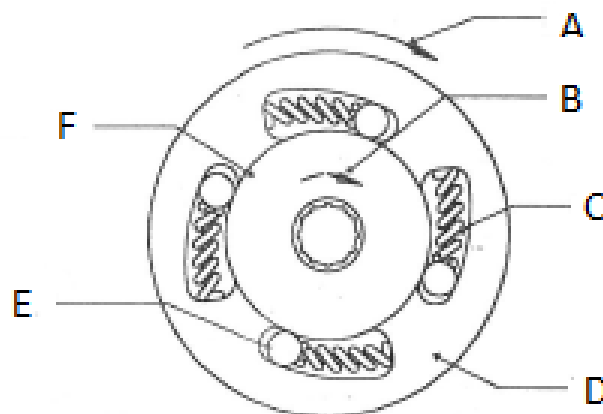
1. Answer ALL the questions.
 2. Read ALL the questions carefully.
 3. Number the answers according to the numbering system used in this question paper.
 4. Write neatly and legibly.
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QUESTION 1

- 1.1 State THREE advantages that a numerical filing system has over an alphabetical system when keeping track of the work done in a workshop. (3)
- 1.2 In FIVE points describe the correct procedure to be followed by a receptionist when dealing with a customer's complaint about poor repair work done to a vehicle. (5)
- 1.3 List FIVE items that should be checked by the safety representative when carrying out an inspection of a garage. (5)
- 1.4 An engine has a cylinder diameter of 95 mm and a stroke length of 88 mm. The combustion chamber is in the cylinder head and has the same diameter as the cylinder. The air standard efficiency is 63%.
Calculate the following:
- 1.4.1 The compression ratio (4)
- 1.4.2 The stroke volume in cm^3 (2)
- 1.4.3 The volume of the combustion chamber in cm^3 (3)
- 1.5 Name the THREE main parts of a transistor. (3)
- [25]**

QUESTION 2

- 2.1 What is the function of the freewheel device in an automatic gearbox? (2)
- 2.2 Study the sketch of the freewheel below and answer the questions.



- 2.2.1 Label the parts numbered A–F in the sketch above. (6)
- 2.2.2 Briefly explain the operation of an automatic gearbox that is fitted with a freewheel device. (4)

- 2.3 Describe in detail the construction and functions of the THREE members of the torque converter. (6)
- 2.4 State FOUR advantages of fluid clutches over friction clutches. (4)
- 2.5 State THREE advantages of a fluid coupling over a torque converter. (3)
- [25]**

QUESTION 3

- 3.1 Describe the operation of an electronic fuel injection system. (6)
- 3.2 Make a neat sectional drawing of a mechanical constant spray injection. Label ALL the parts. (10)
- 3.3 Name THREE advantages of power steering. (3)
- 3.4 State THREE disadvantages of power steering. (3)
- 3.5 List THREE causes of steering pump noise. (3)
- [25]**

QUESTION 4

- 4.1 List THREE basic forms of cam lobes on camshafts. (3)
- 4.2 Describe the function of each of the following with regard to valve timing:
- 4.2.1 Lead on the exhaust valve
- 4.2.2 Lag on the intake valve (2 × 2) (4)
- 4.3 Which valve layout provides cross-flow of gases through the cylinder? (1)
- 4.4 State THREE advantages of an L-head engine over an I-head engine. (3)
- 4.5 Name FIVE types of valves that have been used during the development of internal combustion engines. (5)
- 4.6 Make a neat sectional sketch to illustrate the third differential on tandem drive vehicles. Label the SIX main parts. (9)
- [25]**

TOTAL: 100