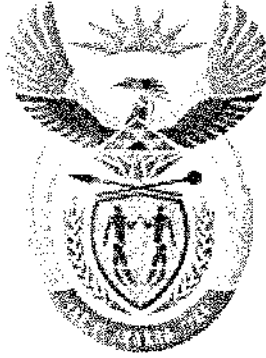


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higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T370(E)(N12)T
NOVEMBER EXAMINATION
NATIONAL CERTIFICATE
DIESEL TRADE THEORY N2

(11040192)

12 November 2014 (Y-Paper)
13:00–16:00

This question paper consists of 5 pages.

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA
NATIONAL CERTIFICATE
DIESEL TRADE THEORY N2
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 fully labelled.
 5. Keep subsections of questions together and DRAW a LINE after each completed question.
 6. Write neatly and legibly
-

QUESTION 1

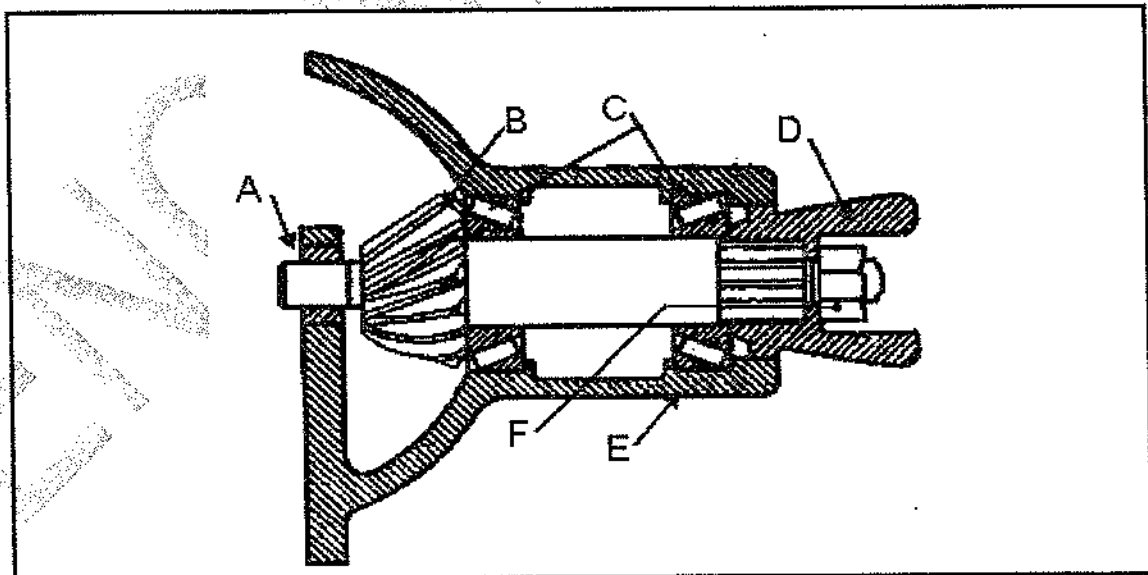
- 1.1 Name THREE functions of a gearbox. (3)
- 1.2 Name THREE of the most common types (with regard to the shape of gear teeth) used in modern gearboxes. (3)
- 1.3 Give ONE advantage and ONE disadvantage for each of the above-mentioned types of gear teeth (shape) in use in a modern gearbox. (6)

[12]

QUESTION 2

- 2.1 Explain the power flow through the differential and final drive when a vehicle is moving around a corner. (Sketches may be used to aid in the explanation.) (8)
- 2.2 State TWO functions of the final drive as used in heavy-duty vehicles. (2)
- 2.3 Name TWO functions of the differential as used in heavy-duty vehicles. (2)
- 2.4 The sketch below shows a pinion as it is used in the final drive.

Label the sketch by writing the names next to the letters (A–F) in the ANSWER BOOK.



(Labels are ONE mark each; 6 x 1) (6)

- 2.5 Use the above sketch to explain where the pinion depth adjustment shims are fitted. (2)

[20]

QUESTION 3

- 3.1 Give FIVE reasons why wheel alignment is of great importance for the smooth running of a vehicle. (5)
- 3.2 Show by means of TWO sketches the difference between a *positive camber* and a *zero camber*. (6)
- 3.3 Name any TWO steering boxes in use on heavy-duty trucks. (2)
- 3.4 Name TWO functions of a steering box on a heavy-duty vehicle. (2)
- 3.5 Name the TWO types of balancing and which type needs to be done first during wheel balancing. (3)
- 3.6 What is the point of ensuring that the 'Ackerman principle' is correct when checking wheel alignment? (1)
- 3.7 What is the purpose of the dot on the outer wall of a tyre? (1)
- [20]

QUESTION 4

- 4.1 Draw a neat sectional view of a double piston wheel cylinder as is used on the hydraulic rear wheel brakes of trucks. (8)
- 4.2 Give TWO reasons why 'brake pedal free play' is needed on a brake system. (2)
- 4.3 Give THREE advantages of using a tandem master cylinder on a vehicle. (3)
- 4.4 Can you use a brake master cylinder consisting of a check valve on disk brakes? Motivate your answer. (3)
- 4.5 Explain which procedures should be followed when a truck's drum brakes are adjusted. (4)
- [20]

QUESTION 5

- 5.1 Make a neat sketch of a paper element air cleaner. (8)
- 5.2 Name TWO functions of an air cleaner. (2)
- 5.3 What is meant by the term *cetane rating* when referring to diesel fuel? (1)
- 5.4 Name any TWO methods that assist in increasing air turbulence during the intake stroke of diesel engines. (2)

- 5.5 Name THREE requirements for a suitable injection-pump test room. (3)
- 5.6 What is meant by the term *ignition delay period*? (1)
- 5.7 Name the function of each of the following:
 - 5.7.1 Fuel lift pump
 - 5.7.2 Diesel injection pump
 - 5.7.3 Injector

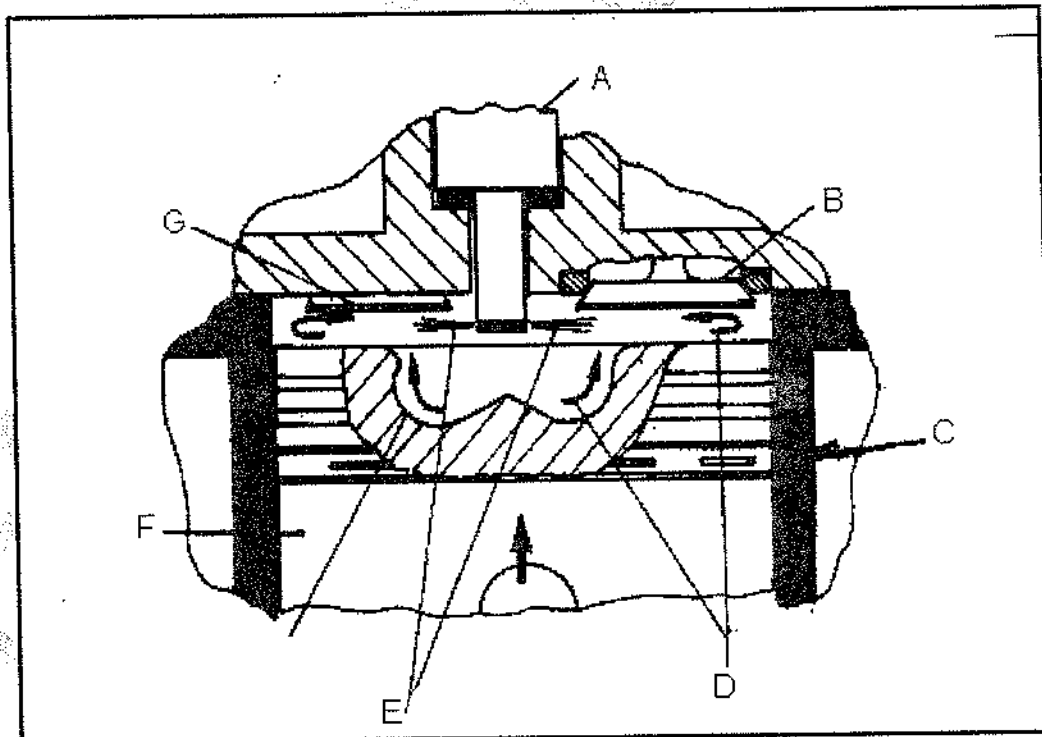
(3 × 1)

(3)
[20]

QUESTION 6

6.1 The sketch below shows a combustion chamber as is found in diesel engines.

Label the sketch by writing the name for each part next to the letter (A–G) in the ANSWER BOOK.



(Labels are ONE mark each; Any 6 x 1)

(6)

6.2 Is the above-mentioned combustion chamber a single swirl or a double swirl combustion chamber? Motivate your answer.

(2)
[8]

TOTAL: 100