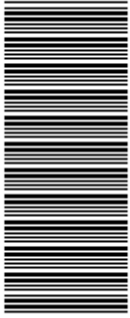


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Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

**T370(E)(J22)T  
AUGUST EXAMINATION**

**NATIONAL CERTIFICATE**

**DIESEL TRADE THEORY N2**

**(11040192)**

**22 July 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

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**INSTRUCTIONS AND INFORMATION**

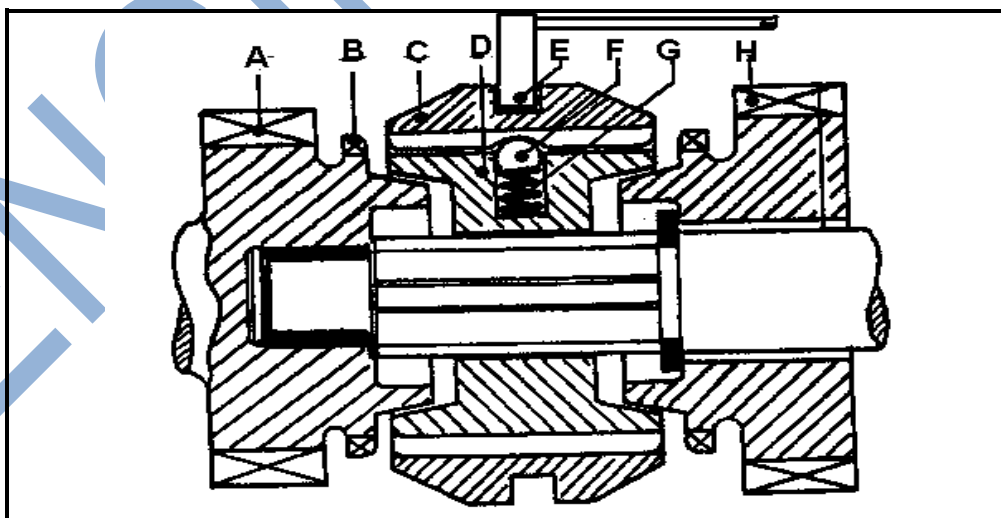
1. Answer ALL the questions.
  2. Read ALL the questions carefully.
  3. Number the answers according to the numbering system used in this question paper.
  4. Write neatly and legibly.
-

**QUESTION 1**

- 1.1 There are two main types of Compression Ignition (CI) engines, namely Direct Injection models and Indirect Injection models.
- 1.1.1 State THREE advantages of Direct Injection engines compared to Indirect Injection engines. (3)
- 1.1.2 State THREE disadvantages of Direct Injection engines compared to Indirect Injection engines. (3)
- 1.2 Draw a neat labelled sketch of a fuel-supply system that is used on four-cylinder diesel engines.
- Include the following components in the sketch:  
Fuel tank, Fuel supply pipe, Water trap filter, Low pressure fuel lift pump, Secondary filter, Primary filter, High pressure fuel lines and Injectors. (8)
- 1.3 Name FOUR types of fuel filter materials used in diesel fuel systems. (4)
- 1.4 State TWO functions of the copper washer that is fitted between the injector and the cylinder head. (2)
- [20]**

**QUESTION 2**

FIGURE 1 shows a synchronising unit.  
Refer to the figure and answer the questions:

**FIGURE 1**

- 2.1 Name this synchronising unit. (1)
- 2.2 List the labelled parts (A–H) in your ANSWER BOOK. (8)

- 2.3 Explain the operation of this synchronising unit during gear changing. (5)
- 2.4 State FOUR functions of a gearbox. (4)
- 2.5 State ONE function of the following:
- 2.5.1 Interlocking mechanism (1)
- 2.5.2 Locking mechanism (1)
- [20]

### QUESTION 3

- 3.1 State FOUR safety requirements of a steering mechanism. (4)
- 3.2 Give TWO reasons why the correct castor angle is a necessity. (2)
- 3.3 Show, by means of TWO labelled sketches, the difference between a *positive castor* and a *zero castor*. (8)
- 3.4 Name FOUR types of steering boxes used on light vehicles. (4)
- 3.5 Name the TWO types of wheel balancing methods. (2)
- [20]

### QUESTION 4

FIGURE 2 below shows a final drive and differential assembly.  
Refer to the figure and answer the questions:

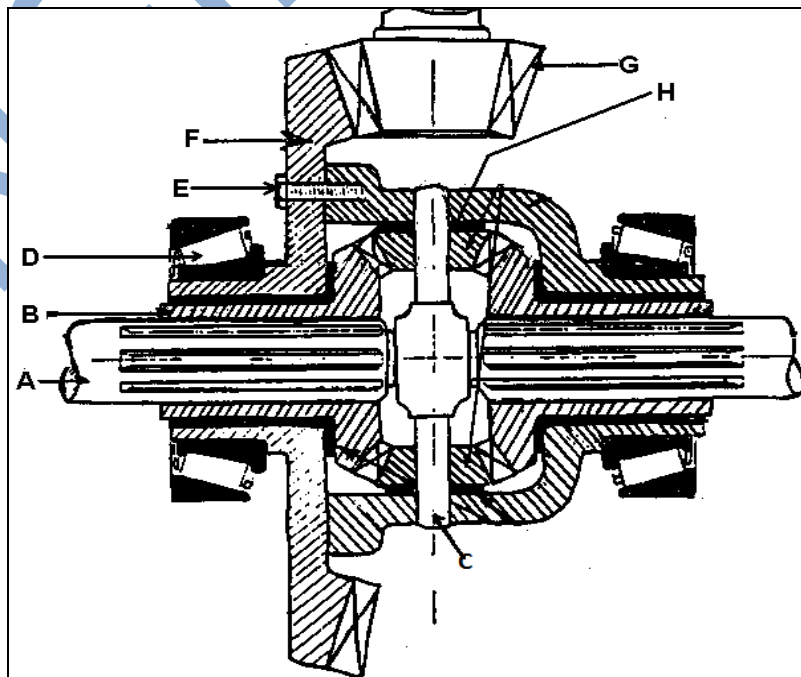


FIGURE 2

- 4.1 List the labelled parts (A–H) in your ANSWER BOOK. (8)
- 4.2 Explain the power flow through this assembly when the vehicle is moving forward. (4)
- 4.3 State TWO advantages and two disadvantages of:
- 4.3.1 Semi floating rear axles (4)
- 4.3.2 Fully floating rear axles (4)
- [20]**

### QUESTION 5

- 5.1 Bleeding of a braking system can be described as the removal of air from the system.
- Explain the procedure to be followed when bleeding the brakes in a hydraulic brake system. (6)
- 5.2 As a diesel mechanic it is important to identify problems in a braking system.
- Give THREE reasons for each of the following common brake problems that may occur on a vehicle:
- 5.2.1 Excessive brake pedal free play (3)
- 5.2.2 Spongy brake pedal (3)
- 5.2.3 Dragging brakes (3)
- 5.3 Name TWO types of brake callipers. (2)
- 5.4 State THREE properties of a good hydraulic brake fluid. (3)
- [20]**

**TOTAL: 100**