



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T450(E)(N27)T

DIESEL TRADE THEORY N3

(11041823)

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

This question paper consists of 6 pages.

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA
NATIONAL CERTIFICATE
DIESEL 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.
5. Formula:

$$N = 1 - \left[\frac{1}{R} \right]^{0.4}; \quad Cr = \frac{Vs + Vc}{Vc}; \quad Vs = \frac{\pi D^2}{4} \times Ls$$

2.2 Briefly explain, with the aid of two neat sketches of a crankshaft, the following:

2.2.1 Static crankshaft balance (3)

2.2.2 Dynamic crankshaft balance (4)

[20]

QUESTION 3

3.1 FIGURE 2 below shows a sectional sketch of a one-way clutch. Name the parts numbered 3.1.1–3.1.4. Write only the name of the part next to the question number (3.1.1–3.1.4) in the ANSWER BOOK.

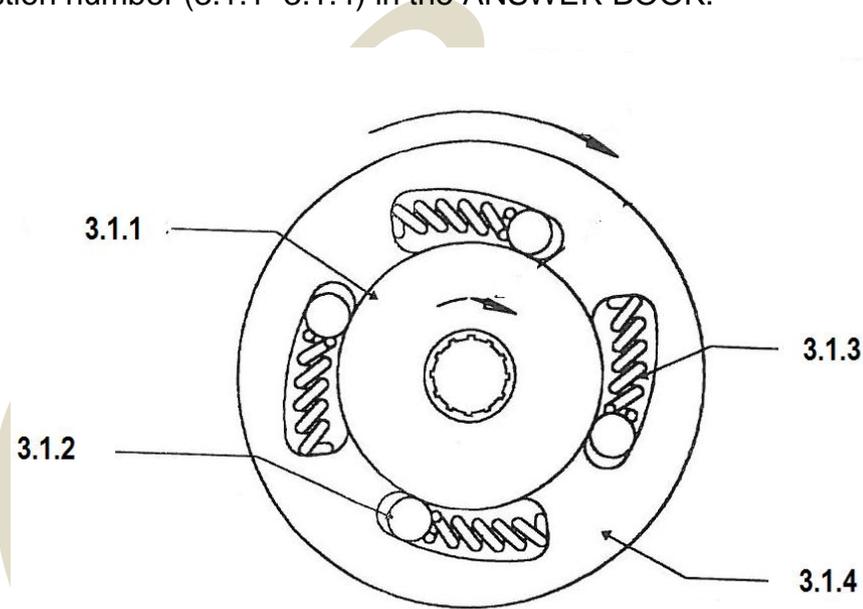


Figure 2

3.2 Describe the operation of the one-way clutch. (4)

3.3 Describe the operation of the one-way clutch. (6)

3.3 List FIVE advantages of an automatic gearbox when compared to a conventional gearbox. (5)

3.4 State the Function of the following components in an automatic gearbox:

- 3.4.1 Oil pump
- 3.4.2 Brake servo
- 3.4.3 Vacuum modulator
- 3.4.4 Hydraulic governor
- 3.4.5 Pressure relief valve

(5 × 1) (5)
[20]

QUESTION 4

4.1 FIGURE 3 shows a cross-sectional sketch of a power steering system. Name the parts numbered 4.1.1–4.1.8. Write only the name of the part next to the question number (4.1.1–4.1.8) in the ANSWER BOOK

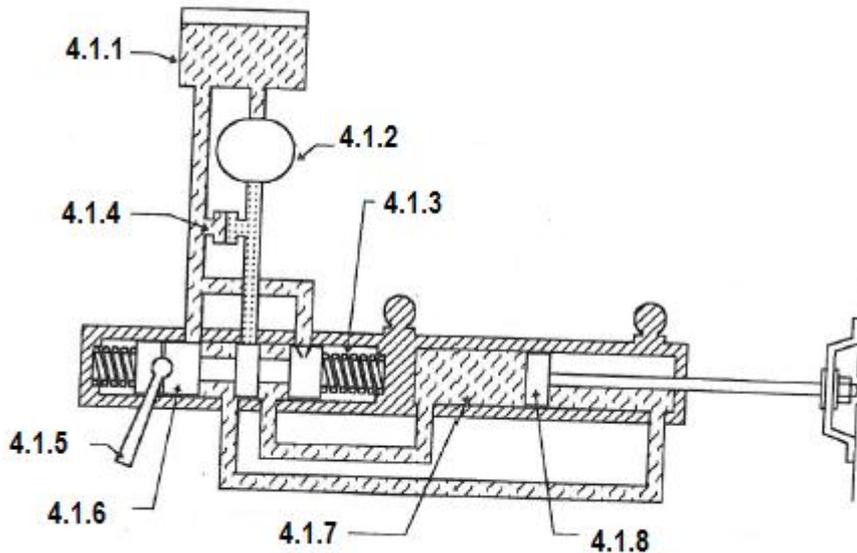


Figure 3

- 4.2 Describe the operation of the power steering system when the vehicle is steered to the left. (8)
- 4.3 A client complains that the steering wheel action of the power steering on her vehicle is jerky when parking, and want you to diagnose the problem and explain how to correct it. (6)
- List three possible causes for the problem and give one corrective action that must be taken for each fault identified. (6)

[20]

QUESTION 5

5.1 FIGURE 4 below shows a cross-sectional sketch of an injection advance unit used on a distributor-type injection pump. Name the parts numbered 5.1.1–5.1.5. Write only the answer next to the question number (5.1.1–5.1.5) in the ANSWER BOOK.

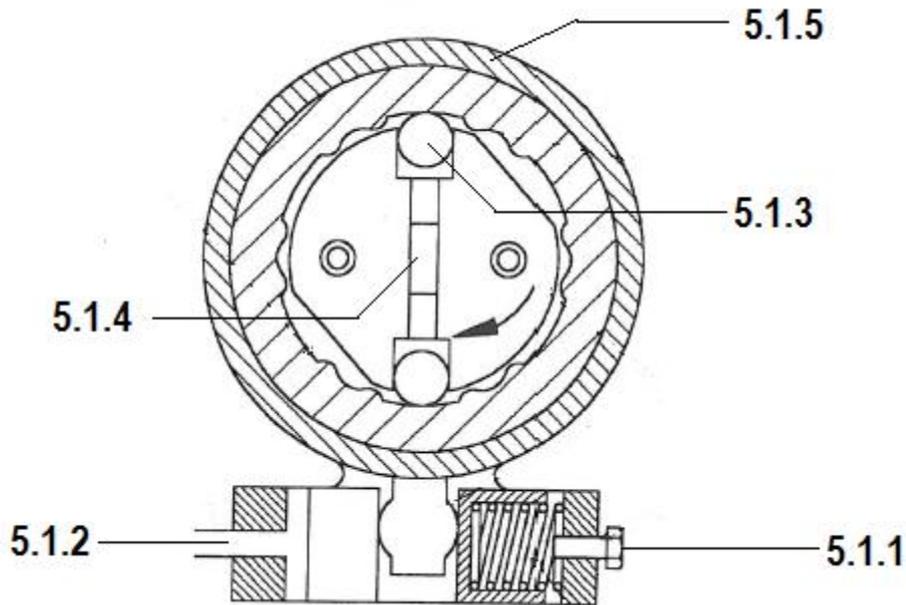


Figure 4

- 5.2.1 Describe, the operation of the injection advance unit during acceleration in a diesel fuel system. (5)
- 5.2.2 What is the purpose of the injection advance unit found in diesel fuel systems? (5)
- 5.3 An irate client returns a truck to the workshop due to the poor quality of repairs carried out by the technician. (2)
- Briefly describe how the receptionist will go about calming and satisfying the customer. (8)

[20]

TOTAL: 100