higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T1240**(E)**(A2)T

NATIONAL CERTIFICATE

MOTOR TRADE THEORY N3

(11040673)

2 August 2018 (X-Paper)
09:00–12:00

This question paper consists of 4 pages.

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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. FORMULAE:

   C.R. = $\frac{Vs+Vc}{Vc}$ Vs = $\frac{\pi d^2}{4}$ x SL N = 1 – $(\frac{1}{r})^{0{,}4}$

   h = $\frac{SL}{CR-1}$
5. Write neatly and legibly.

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QUESTION 1

1.1 Calculate the air standard efficiency for a compression ratio of 9,8:1. (5)

1.2 An engine has a swept volume of 245 cm³.

What must be the clearance volume for a compression ratio of 18:1? (3)

1.3 List FOUR types of power steering pumps used in motor vehicle steering systems. (4)

1.4 Name the TWO types of crankshaft balancing that should be checked before assembling an engine. (2)

1.5 Explain the term injector dribble when testing fuel systems. (2)

1.6 Explain why fuel blockages can easily occur on direct injection nozzles. (1)

1.7 List FIVE functions of an oil pump in an automatic transmission system. (5)

1.8 Name THREE types of differentials commonly used in vehicles. (3)

[25]

QUESTION 2

2.1 Draw the table below in your answer book and complete the missing information, by filling in the causes and corrections based on the power steering diagnosis.

CONDITION	CAUSES	CORRECTIONS
Noisy pump	2.1.1	2.1.2
Low-pressure pump	2.1.3	2.1.4
Hard steering	2.1.5	2.1.6

(6)

2.2 State TWO functions of the steering damper. (4)

2.3 Explain the operation of a fluid flywheel. (5)

2.4 Name FOUR different types of oil pumps found in engines. (4)

2.5 Explain how too much tension in the contact breaker point spring, will affect the operation of the ignition system. (2)

2.6 Explain the functions of the condenser in the ignition system. (4)

[25]

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QUESTION 3

3.1 Name FOUR engine sensors and explain the function of each sensor. (8)

3.2 Give TWO advantages of the hall type sensor. (2)

3.4 Explain the operation of a four stroke petrol engine during the compression stroke. (5)

3.5 List FIVE disadvantages of four wheel drive? (5)

3.6 Give TWO reasons why an accident register is important in the workplace. (2)

3.7 State THREE reasons why a customer can dispute a bill for the repair work that has been done to his or her vehicle. (3)

[25]

QUESTION 4

4.1 State TWO advantages and TWO disadvantages of chain drives used in valve operating mechanisms. (4)

4.2 State FOUR factors that influence the valve clearance. (4)

4.3 Describe the operation of a high altitude compensator sensor. (5)

4.4 Explain why the seat for an exhaust valve should not be left too wide. (2)

4.5 Explain in detail, the differences between sodium valves and a masked valves and how the operation and performance of the engine is influenced by the use of each valve. (8)

4.6 Name TWO methods used to fit the valve seat inserts? (2)

[25]

TOTAL: 100

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