higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T1220**(E)**(A2)T

NATIONAL CERTIFICATE

MOTOR TRADE THEORY N1

(11040651)

2 August 2019 (X-Paper)
09:00–12:00

This question paper consists of 6 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
MOTOR TRADE THEORY N1
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. Make ALL sketches neatly and in good proportion.
5. Do ALL answers, including sketches, in the ANSWER BOOK.
6. Write neatly and legibly.

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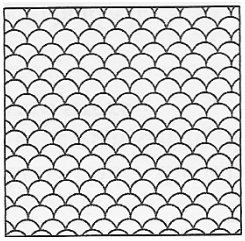
QUESTION 1

1.1 Various options are given as possible answers to the following questions. Write only the letter (A–D) next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

1.1.1 Warning signs can be identified by its …

A triangular shape, red background and white image.
B triangular shape, yellow background and black image.
C circular shape, yellow background and white image.
D triangular shape, red background and black image.

1.1.2 The file pattern shown below is typical of a … file.



A smooth
B second-cut
C rough
D bastard

1.1.3 A drill press is mainly used for …

A drilling holes.
B pressing wheel bearings.
C reaming drilled holes.
D sharpening drills.

1.1.4 To measure the pitch of a thread a … must be used.

A plastigauge
B thread-pitch gauge
C depth gauge
D feeler gauge

1.1.5 Which ONE of the following provides a surface onto which expanding combustion gasses can act:

A Connecting rods
B Inlet and exhaust valves
C Cylinder walls
D Piston crowns

1.1.6 Another name for a flywheel clutch assembly:

A Clutch plate
B Clutch kit
C Coupling
D Drive train

1.1.7 For the Otto cycle to be complete the crankshaft must make …

A six revolutions.
B one revolution.
C two revolutions.
D eight revolutions.

1.1.8 In a bypass oil-filtering system … of the oil pumped is filtered.

A all
B some
C none
D None of the abovementioned

1.1.9 A water-cooled cooling system is based on this heat-transfer principle:

A Air to air
B Water to air
C Direct air
D Water to water

1.1.10 Tyre-wear pattern typically indicating over-inflation:

A On the inside edge
B In the middle
C On the outer edge
D On both outer edges

(10 ×1) (10)

1.2 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (1.2.1–1.2.10) in the ANSWER BOOK.

1.2.1 When in a hurry it is acceptable to use a grindstone without goggles.

1.2.2 A hacksaw can be used to cut all types of plastic.

1.2.3 Vernier callipers are calibration tools.

1.2.4 The function of an oil pump is to pump oil to lubricate engine bearings.

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1.2.5 To reduce clutch pedal free play, the clutch cable must be tightened.

1.2.6 The two-stroke cycle delivers power every 720° of crankshaft rotation.

1.2.7 The only function of an oil filter is to clean the engine oil.

1.2.8 Coolant additives increase the boiling point of water.

1.2.9 It is advisable to reduce tyre pressures when driving in soft sand like desert sand.

1.2.10 Battery acid can damage the paintwork of a car should it be spilled on the paintwork.

(10 × 1) (10)
[20]

QUESTION 2

2.1 You are about to use a new bench grinder to shape a small piece of metal.

List EIGHT safety precautions to observe before starting the job. (8)

2.2 Name FIVE important measuring tools that must be part of the toolbox in an engine-repair shop. (5)

2.3 Name TWO types of gear pullers. (2)
[15]

QUESTION 3

3.1 Your friend asked you to replace the clutch of her car.

Which FIVE prechecks must be performed before starting the job to confirm that the clutch is defective? (5)

3.2 It is standard practice to buy a used engine block for rebuilding purposes.

Explain FIVE physical checks to ensure that the block is economically serviceable. (5 × 2) (10)

3.3 Make a neat, labelled sketch of a poppet valve. (5)
[20]

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QUESTION 4

4.1 Tabulate FIVE differences between petrol and diesel engines. (5 + 5) (10)

4.2 Briefly explain the construction of a two-stroke engine. (5)
[15]

QUESTION 5

5.1 Explain *hydrostatic lubrication* and give a reason for this type of lubrication on some engines. (3)

5.2 What is the difference between *static friction* and *dynamic friction*? (2)

5.3 List FIVE oil additives and give the function of each. (5 × 2) (10)
[15]

QUESTION 6

6.1 List EIGHT safety precautions to observe when charging a battery. (8)

6.2 Give FIVE negative effects of under-inflated tyres. (5)

6.3 Name TWO types of cooling systems used in automotive engine designs. (2)
[15]

TOTAL: 100

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