higher education & training

Department:
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REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

MOTOR TRADE THEORY N1

(11040651)

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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. Use only a black or blue pen.
5. Write neatly and legibly.

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QUESTION 1

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

1.1.1 An unplanned and uncontrollable event, caused by unsafe acts or conditions can be defined as …

A an accident.
B an unplanned event.
C a mistake.
D a hazardous condition.

1.1.2 The distance between the wheel and tool rest of the bench grinder should be set at …

A 2 mm.
B 1 mm.
C a safe distance.
D no distance.

1.1.3 The positive plates of a battery is made of …

A sponge lead.
B lead peroxide.
C carbon dioxide.
D aluminium.

1.1.4 The main constituent in car tyres is …

A wire mesh.
B ryan .
C plastic.
D rubber.

1.1.5 The main function of the valve spring is to …

A provide a bounciness in the valve.
B allow the camshaft to open the valve.
C close the valve to form an airtight seal.
D keep the valve straight.

1.1.6 The main disadvantage of the piston-type oil pump is …

A pulsation.
B that it is too small.
C that it cannot turn with the crankshaft.
D that it wears out easily.

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1.1.7 When reading the SAE number of oil, the 'w' indicates …

A warm
B winter
C wet
D worn engine

1.1.8 The function of the piston is to …

A move up and down.
B absorb the combustion heat.
C provide a surface for expanding gasses to act upon.
D allow the engine to have less weight.

1.1.9 The type of pump used as a water pump on an engine is the …

A vane type.
B piston type.
C gear type.
D impeller type.

1.1.10 A common mounting surface for the clutch is the …

A gearbox.
B flywheel.
C propshaft.
D crankshaft.

(10 × 1) (10)

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

1.2.1 A ridge cutter can be used to hone (deglaze) a cylinder.

1.2.2 Tyre tread patterns are only for cosmetic purposes.

1.2.3 Spark plugs are not required on diesel engines.

1.2.4 Petrol engines cannot have direct injection fuel systems.

1.2.5 It is good practice to remove the thermostat to prevent the engine from heating up.

1.2.6 Safety goggles must be used when working with a hammer and chisels.

1.2.7 You can use a centre punch to remove dowel pins or cotter pins.

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1.2.8 Timing belts must be replaced at service intervals set by the manufacturer.

1.2.9 The most common reason for a clutch slipping is worn friction linings.

1.2.10 An internal micrometer is used to measure internal distances.

(10 × 1) (10)
[20]

QUESTION 2

2.1 Name FIVE elements of housekeeping. (5)

2.2 Distinguish between an *unsafe condition* and an *unsafe act* and give TWO examples of each. (2 × 3) (6)

2.3 Name FIVE different types of oil filter wrenches. (5)
[16]

QUESTION 3

3.1 Explain how a hydrometer test is done on a battery. (6)

3.2 Name TWO materials that are used to make the battery case. (2)

3.3 What are the constructional differences of *cross-ply tyres* and *radial-ply tyres*? (2 × 2) (4)

3.4 Why should a cross-ply tyre and a radial-ply tyre not be fitted on the same axle? (2)
[14]

QUESTION 4

4.1 Name the FOUR parts of a conventional poppet valve. (4)

4.2 Describe where the camshaft can be placed in different engine constructions. (3)

4.3 What is the main advantage of positioning valves at an angle to the cylinder? (1)

4.4 Make a neat sketch of a crankshaft for a single cylinder and label the most important parts. (6)

4.5 Explain the significance of a positive chain tensioner. (4)

4.6 Name TWO common materials used to manufacture valve seat inserts. (2)
[20]

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QUESTION 5

5.1 Name the TWO types of pressure plate designs. (2)

5.2 Name TWO types of mechanical clutch actuating methods. (2)

5.3 Draw a neat, labelled sketch of a clutch master cylinder. (10)

5.4 What is the main advantage of a non-permanent cooling fan? (1)

5.5 Explain the meaning of a *dragging clutch.* (3)
[18]

QUESTION 6

6.1 State FIVE functions of lubricating oil. (5)

6.2 Draw a neat sketch of an internal gear pump. Clearly name and indicate the inlet and outlet ports. (7)
[12]

TOTAL: 100

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