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higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE MOTOR TRADE THEORY N2

(11040662)

**9 April 2020 (X-paper)
09:00–12:00**

This question paper consists of 7 pages.

215Q1A2009

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA
NATIONAL CERTIFICATE
MOTOR TRADE THEORY N2
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. Start each section on a new page.
 5. Use only a black or blue pen.
 6. Write neatly and legibly.
-

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 Which ONE of the following factors will influence the voltage to jump the gap of a spark plug?

- A Shape of electrode forming the gap
- B Conductivity of gases in the gap
- C Fuel-air mixture ratio existing in the gap
- D Reach of the spark plug



1.1.2 The ... provides storage for the current induced in the primary circuit at the time of break.

- A induction coil
- B distributor
- C condenser
- D governor

1.1.3 The distributor serves the following purpose in the ignition system:



- A Operates electrical system mechanisms
- B Distributes high-tension current to spark plug at correct time
- C Distributes low-tension current to spark plug at correct time
- D Distributes high voltage to the starter motor

1.1.4 When brakes are applied on a moving vehicle, the kinetic energy is converted into ... energy.

- A mechanical
- B heat
- C electrical
- D potential

1.1.5 In a disc-brake assembly, the front disc is attached to the ...

- A calliper.
- B stub axle.
- C hub.
- D axle.

1.1.6 The live axle on a front-wheel drive vehicle houses the ...

- A final drive.
- B differential.
- C half shafts.
- D CV joints.



1.1.7 In which ONE of the following circuits in the ignition system is the ballast resistor situated?

- A Open circuit
- B Primary circuit
- C Secondary circuit
- D Close circuit



1.1.8 Which ONE of the following does not form part of a drum-brake assembly?

- A External contracting brake
- B Internal expanding brake
- C Brake calliper
- D Leading and trailing brake shoe

1.1.9 The chamber of a vacuum brake/brake booster consists of ...

- A an atmospheric valve.
- B a vacuum valve.
- C both A and B.
- D a servo valve.

1.1.10 Coil springs absorb shocks by ...

- A bending.
- B twisting.
- C compression.
- D tension.



(10 × 1) (10)

1.2 FIGURE 1 shows a braking system.

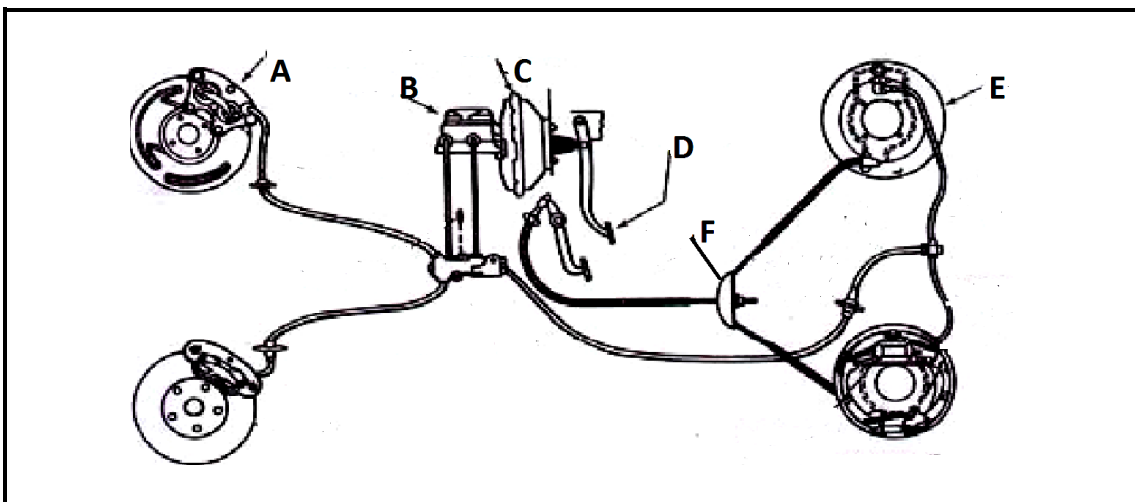



FIGURE 1



Label the parts of the braking system by writing only the answer next to the letter (A–F) in the ANSWER BOOK.

(6 × 1) (6)

1.3 Give ONE function of each of the following braking components shown in FIGURE 1:

1.3.1 Component C 

1.3.2 Component F (2 x 1) (2)

1.4 State TWO functions of a check valve. (2) [20]

QUESTION 2

2.1 List FIVE circuits found in carburettors. (5)

2.2 FIGURE 2 shows a carburettor.

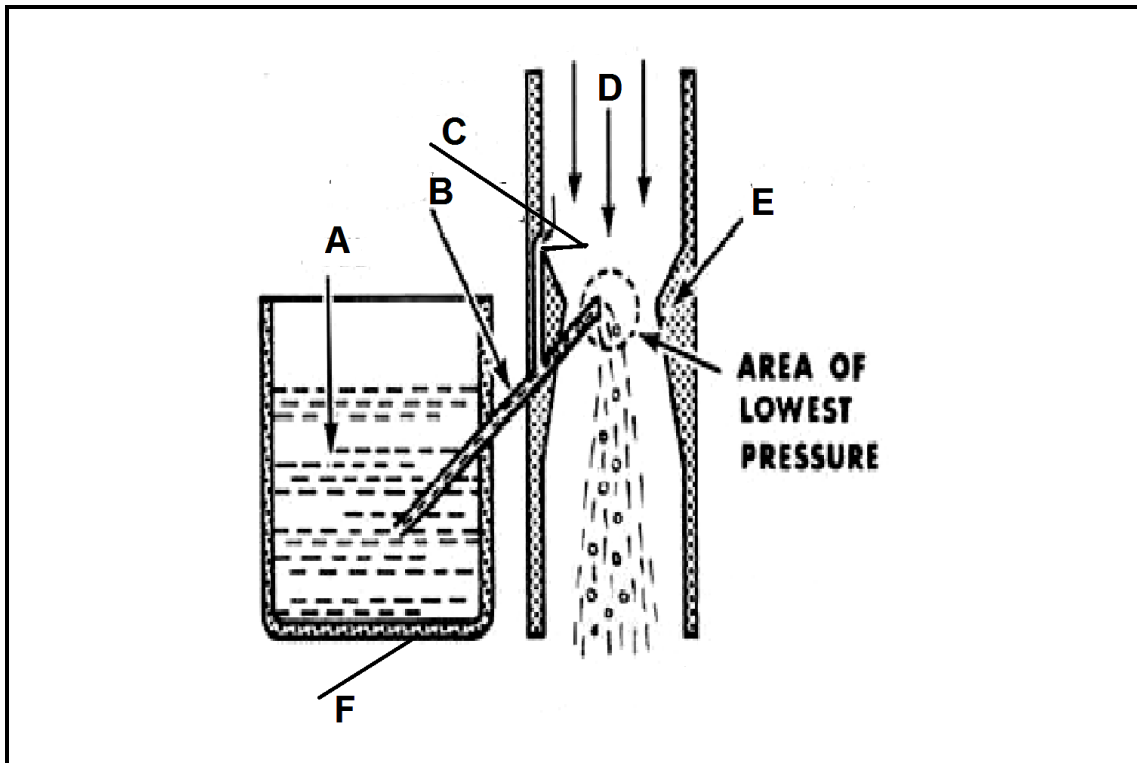



FIGURE 2



Label the components of the carburettor by writing only the answer next to the letter (A–F) in the ANSWER BOOK. (6 x 1) (6)

2.3 Explain the operation of the vacuum-advance mechanism in a distributor.  (5)


2.4 Explain TWO differences between a *hot spark plug* and a *cold spark plug*. (2 + 2) (4)

[20]

QUESTION 3

- 3.1 Give THREE advantages of rubber and fabric universal joints. (3)
- 3.2 Give THREE advantages of a hollow propeller shaft.  (3)
- 3.3 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (3.3.1–3.3.5) in the ANSWER BOOK.
- 3.3.1 The cluster gear provide for different gear ratios.
- 3.3.2 Whipping of the propeller shaft is usually due to lack of balance.
- 3.3.3 The thrust washers on sun gears absorb side thrust.
- 3.3.4 A universal joint allows the propeller shaft to transmit torque at various angles.
- 3.3.5 One advantage of a constant velocity (CV) joint is that it can transmit more speed.  (5 × 1) (5)
- 3.4 State the function of the slip joint on a propeller shaft. (1)
- 3.5 Give TWO reasons why Hooke's-type universal joints are not suitable for front-wheel drive shafts. (2)
- 3.6 Name THREE types of interlocking mechanisms on a gearbox. (3)
- 3.7 Give THREE advantages of a semifloating rear axle. (3)
- [20]**

QUESTION 4

- 4.1 Explain the power flow when the second gear is selected in a constant-mesh five-speed gearbox. (4)
- 4.2 Give TWO advantages of a baulk-ring synchromesh unit. (2)
- 4.3 Explain THREE functions of a gearbox. (3)
- 4.4 Give TWO causes of each of the following gearbox faults:
- 4.4.1 Gearbox noisy in neutral 
- 4.4.2 Gears grate when being changed (2 × 2) (4)

- 4.5 Explain the operation of the differential on a rear-wheel drive assembly when the vehicle is turning. (4)
 - 4.6 Give THREE disadvantages of the worm-and-wheel final drive assembly. (3)
- [20]**



QUESTION 5

- 5.1 Give TWO advantages of a castor angle. (2)
 - 5.2 Explain TWO functions of a good steering system. (2)
 - 5.3 List FOUR prechecks to carry out before wheel alignment can be set on a vehicle. (4)
 - 5.4 Explain each of the following terms:
 - 5.4.1 Oversteer
 - 5.4.2 Understeer
- (2 × 1) (2)
- 5.5 Give TWO reasons for unequal-length parallel wishbones. (2)
 - 5.6 List FOUR dangers of worn shock absorbers. (4)
 - 5.7 State FOUR possible causes of excessive steering wheel play. (4)
- [20]**

TOTAL: 100