

higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE
AUGUST EXAMINATION
MOTOR TRADE THEORY N2

22 JULY 2014

This marking guideline consists of 6 pages.

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QUESTION 1

1.1 CV joints are smoother in operation with less vibration and kickback at steering. ✓
 CV joints can operate through larger range of angles. ✓
 Inner CV joints are like slip joints. ✓
 Protected from dirt and water. ✓
 Keeps grease in. ✓

(Any 4 x 1) (4)

1.2

- Input Shaft ✓
- Cluster shaft/gear ✓
- Second Gear ✓
- Synchroniser Sleeve ✓
- Synchroniser Hub ✓
- Main/Output shaft ✓

(6)

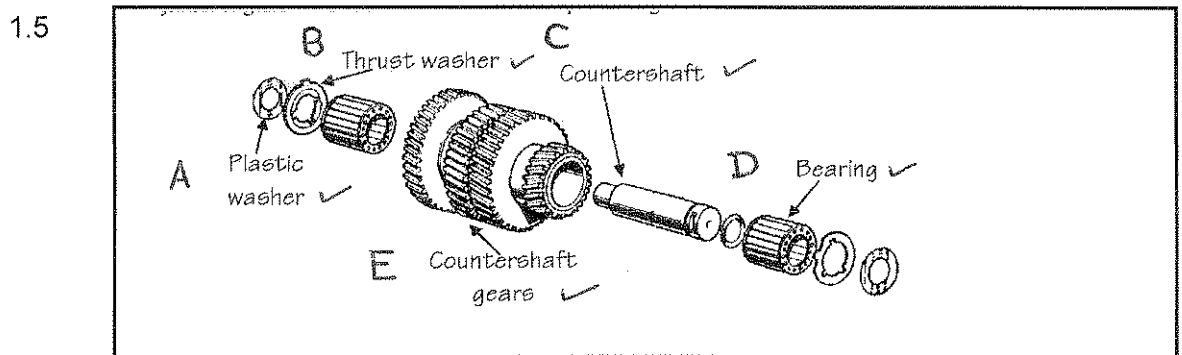
1.3

- Incorrect clutch adjust. Binding Clutch ✓
- Worn/Damaged synchroniser unit ✓
- Worn shaft, ✓
- Worn bearings, ✓
- Worn selector mechanism. ✓
- Low oil in gearbox ✓

(Any 4 x 1) (4)

1.4 The interlocking device prevents two gears being selected at the same time. ✓
 It prevent gearbox locking up or breaking. ✓
 Locking selected gears in one position. ✓
 Secure that gears that is not selected is locked in neutral position. ✓

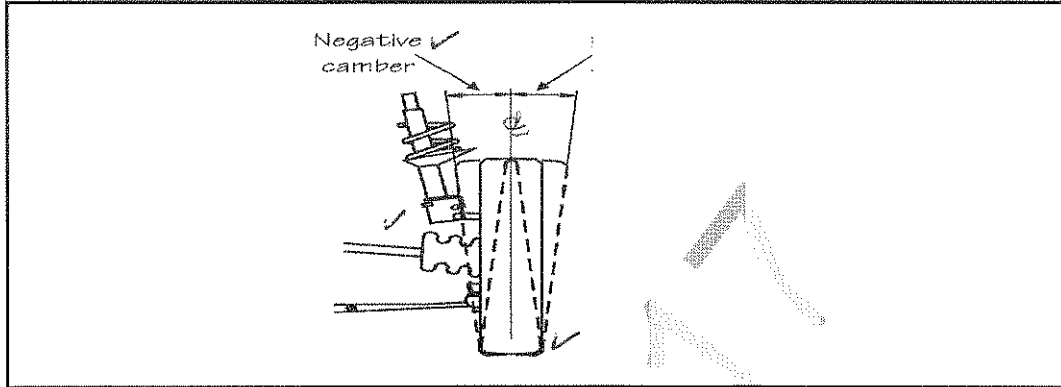
(Any 1 x 1) (1)



[20]

QUESTION 2

2.1 Negative camber is the inward tilt of the wheel and tyre assembly when viewed from the front of the car. ✓



(4)

- 2.2
- Ball joints ✓
 - Steering knuckle ✓
 - Camber/castor rods ✓ ✓
 - Rims ✓
 - Tyres ✓
 - Wheel Bearings ✓
 - Stabilizer bar ✓
 - CV Joint ✓
 - Tie rod end ✓

(Any 3 x 1)

(3)

- 2.3
- Provide steering stability ✓
 - Reduces steering effort ✓
 - Reduces tyre wear ✓
 - Retain the wheel to forward /straight ahead direction. ✓
 - Makes steering easy. ✓

(Any 2 x 1)

(2)

- 2.4
- Can be easily upgraded by addition of leaves ✓
 - Simple connection to axel and body ✓
 - Relatively cheap to manufacture and maintain ✓
 - Stronger than coil springs. ✓
 - It can handle bigger loads. ✓

(Any 3 x 1)

(3)

2.5 Kerb mass is the full operating mass of vehicle with fuel, oil and water all full. to manufactures specifications. ✓ ✓

or

The mass of vehicle as per manufactures capacity specifications without any added load/ mass. ✓ ✓

(2)

2.6 Lock stop is the maximum angular movement of the wheels ✓ and prevents the wheels from touching the body or suspension ✓ when turned full either to left or right. ✓

(3)

MOTOR TRADE THEORY N2

- 2.7
- Check vehicle frame for bend and damage ✓
 - Check suspension/spring heights ✓
 - Check tyre pressure and type: radial or Cross ply ✓
 - Check suspension components for wear, damage. ✓
 - Steering box free play. ✓
- (3)
- (Any 3 x 1) [20]

QUESTION 3

- 3.1
- Transform low battery voltage 12 V to high voltage. ✓
 - High tension voltage between 14000 volts to 30000 volts. ✓
 - This high voltage is creating a strong spark to jump the spark plug air gap. ✓
 - Provides spark into combustion chamber. ✓
- (Any 3 x 1) (3)

- 3.2
- A = Metal housing. ✓
- B = Negative or Positive connection (polarity terminal). ✓
- C = High voltage/ high tension wire to distributor. ✓
- D = Positive or Negative connection (polarity terminal). ✓
- E = Primary windings or secondary windings. ✓
- F = Secondary windings or primary windings. ✓
- G = Coil centre core/ ✓ Insulated copper core/ ✓ Laminated soft-iron core ✓
- (7)

NB: THE POLARITY ON THE TERMINALS MUST CORRESPOND WITH THE WINDINGS.

- 3.3
- R = Resistor. ✓
- N = 14mm size. ✓
- 9 = Heat range reference. ✓
- BYC = Copper core around electrode. ✓
- 4 = Spark plug air gap ✓
- (5)

- 3.4
- During distributor cam rotation the contact breaker is closed. ✓
- This period the contact breaker is closed is measured in degrees. ✓
- This period the coil builds up a magnetic field. ✓
- The dwell angle is measured electronically. ✓
- Set by the contact breaker gap.(mechanically) ✓
- Have an inverse relation between each other. ✓
- (Any 2 x 1) (2)

- 3.5
- We need to protect the engine from dust particles. ✓
 - The air cleaner limits or prevents dust particles entering the intake. ✓
 - Reduce intake suction noise, that can be quite loud especially in Diesel engines. ✓
 - or The air cleaner tones down the suction noise. ✓
- The air cleaner covering acts as a flame arrestor in case engine back fires. ✓
 - Improve fuel efficiency. ✓
 - Reduce engine cylinder wear. ✓
- (Any 3 x 1) (3)
- [20]

QUESTION 4

- 4.1
- It must maintain an even viscosity through a wide range of temperatures. ✓
 - It must not corrode metal parts or damage rubbers. ✓
 - It must be hygroscopic ✓
 - it absorb moisture. ✓
 - It must have high boiling point and low freezing point. ✓ (Any 4 x 1) (4)
- 4.2
- The unit within the master cylinder is the check valve. ✓
 The check valve assembly is to maintain a standing pressure to prevent air or dirt entering the system. ✓
 Keeps pedal free play to a minimum. ✓
 Keeps wheel cylinder seal lips in light contact with cylinder bore to avoid leakage or air entry. ✓
 Prevents re-entry of fluid back to master cylinder. ✓ (Any 4 x 1) (4)
- 4.3
- Fixed calliper ✓
 Floating/swivel type calliper ✓ (2)
- 4.4
- The overspill could have occurred if you did not control the back flow of the fluid by removing cap or placing cloth over reservoir. ✓
 As the brake pads wear, the piston moves out against the pads and the space is filled with brake fluid. ✓
 When you replace the brake pads, the piston has to be moved back to accommodate new brake pads and this displaces the brake fluid back to the reservoir ✓
 and possible overspill if the reservoir was already filled to specifications. ✓ (4)
- 4.5
- Self-energisation is when the brake shoe is forced about the anchor point ✓
 the drum brake and the force of friction against the rotating drum ✓
 produces a wedge or lever effect and in essence gives the shoe a self-servo action. (3)
- 4.6
- Air in system ✓
 - Soft brake hoses ✓
 - Shoes not centred ✓
 - Brake drums cracked ✓
 - Brake pipe or hose bulging. ✓
- (Any 3 x 1) (3)
- [20]

QUESTION 5

- Mixes air and fuel to correct ratio 1-15 to the engine. ✓
- Control engine revolutions / speed. ✓
- Allow the engine to idle. ✓
- Atomise fuel and air for the engine. ✓

(Any 3 x 1) (3)

- 5.2
- A = Venturi ✓
 - B = Vacuum area ✓ or High velocity air flow area ✓
 - C = Petrol nozzle ✓
 - D = Low pressure Air / Inlet air ✓
 - E = Vent for atmospheric pressure ✓
 - F = Petrol /Petrol Bowl / Float Bowl / Fuel bowl ✓
- (6)

- 5.3
- Can be mounted anywhere on vehicle. ✓
 - It is easier to push fuel then pull it and thereby eliminate vapour locks. ✓
 - Irrespective of engine speed fuel pump pressure can be high or pre-set to driving or engine requirements. ✓
- (3)

- 5.4
- The strength of spring and diaphragm ✓
 - Type of fuel system, i.e. carburettor or fuel injection. ✓
 - Delivery pressure of the fuel pump ✓
 - The type of fuel system used ✓
- (Any 2 x 1) (2)

- 5.5
- Low octane fuel ✓
 - Overheated engine ✓
 - Spark plugs have too high heat range ✓
 - High idle speed, throttle valve not closing ✓
 - Faulty idle cut off valve ✓
 - Carbon build-up in engine ✓
 - Pre - ignition ✓
- (Any 3 x 1) (3)

- 5.6
- Engine coolant at operating temperature ✓
 - Warm / hot air from exhaust manifold ✓
 - Electric heating element ✓
- (3)
[20]

TOTAL: 100