

higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

NOVEMBER EXAMINATION

DIESEL TRADE THEORY N2

14 NOVEMBER 2013

This marking guideline consists of 6 pages.

QUESTION 1

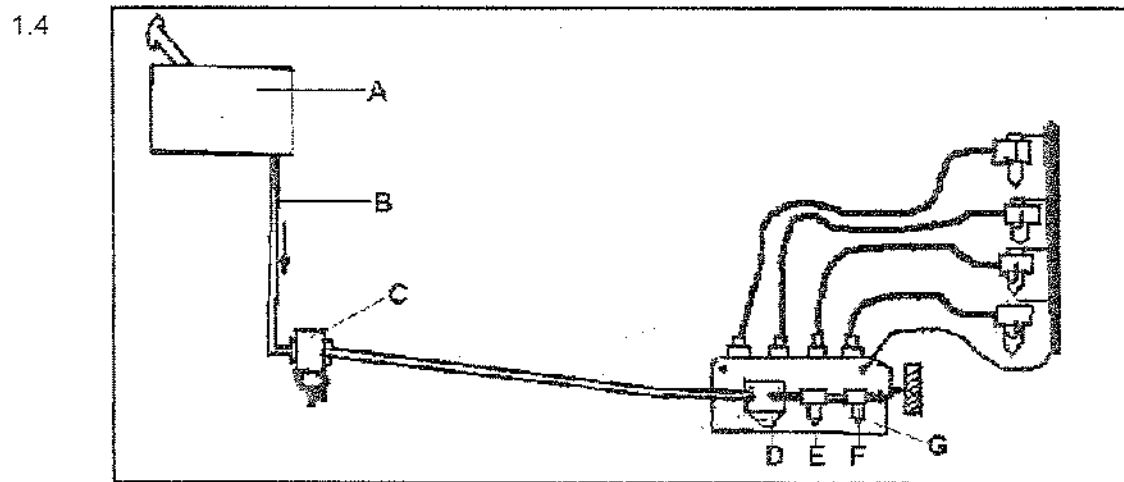
- 1.1
- A = Fuel inlet ✓
 - B = Inlet valve ✓
 - C = Outlet valve ✓
 - D = Fuel outlet ✓
 - E = Cam rocker arm ✓
 - F = Camshaft ✓
 - G = Floating mechanism ✓
 - H = Atmospheric hole ✓
- (8)

1.2 Allows the cam arm still to move with the camshaft while the diaphragm is stationary. This happens during periods when the engine does not need fuel from the fuel system while it is in operation. ✓

(1)

1.3 It enables the diaphragm to move up and down (breathe) through this hole while in operation (also allow the oil to leak out if seal gets worn). ✓

(1)



- A = Fuel tank ✓
 - B = Fuel supply pipe ✓
 - C = Water trap ✓
 - D = Fuel lift pump ✓
 - E = Secondary fuel filter ✓
 - F = Primary fuel filter ✓
 - G = Inline Diesel injection pump ✓
- (7)

- 1.5
- Paper maché ✓
 - Porous porcelain ✓
 - Metal plates tightened to each other ✓
- (3)
[20]

QUESTION 2

- 2.1 A = Spherical coupling ✓
 B = Universal joint ✓
 C = Drive shaft ✓
 D = Shock absorber ✓
 E = Gearbox rubber vibration damper ✓ (5)

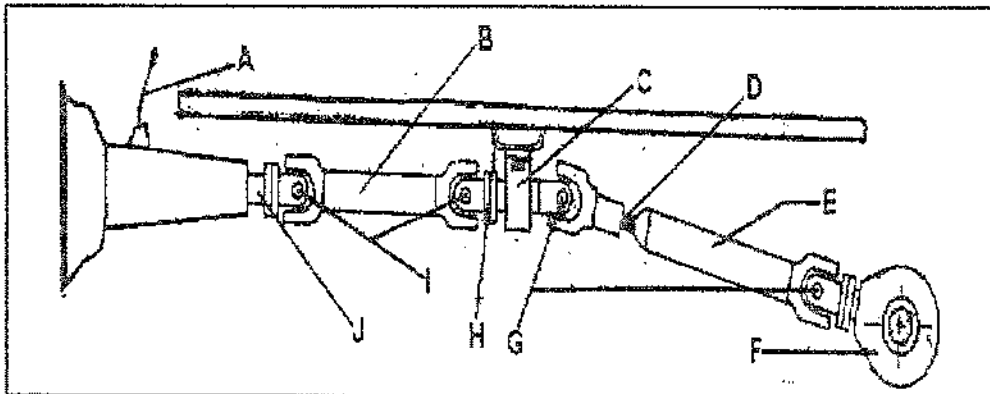
2.2 Hotchkiss drive ✓ (1)

2.3 Keep the wheel on the road irrespective of the road surface. ✓ (1)

2.4 Vibration damper between the torque tube and the gearbox. ✓ (1)

- 2.5 • To keep the spring blades in position ✓
 • To keep the final drive housing in position with the chassis of the vehicle ✓ (2)

2.6



SPLIT TYPE DRIVESHAFT

- A = Gearlever ✓
 B = Front propshaft ✓
 C = Centre bearing ✓
 D = Slip joint ✓
 E = Rear propshaft ✓
 F = Final drive housing ✓
 G = Universal joints (Hooke) at rear propshaft ✓
 H = Centre bearing bracket ✓
 I = Universal joints (Hooke) at front propshaft ✓
 J = Gearbox rear flange ✓

(10)
[20]

QUESTION 3

- 3.1 A = Selector shafts✓
 B = Gear lever✓
 C = Gearbox housing✓
 D = Locking mechanism✓
 E = Interlocking mechanism✓
 F = Selector fork✓ (6)
- 3.2 Prevents two gears to be selected simultaneously.✓ (1)
- 3.3 Ensure that the sinchro-sleeve remains in gear after gear selection.✓ (1)
- 3.4
- Ensure that the main shaft and cluster shaft gears are meshing properly with each other to ensure even tooth contact.✓
 - Ensure proper oil lubrication between the thrust washers and the main shaft.✓
 - Ensure easy gear selection during gear changing. ✓ (3)
- 3.5
- Constant loading type✓
 - Baulk ring type✓ (2)
- 3.6
- Ensure sufficient torque for pulling away from rest.✓
 - Ensure neutral gear selection on gearbox whilst the engine is running.✓
 - Provide different gear ratios to enable high speed at low engine revolutions.✓
 - Enable the vehicle to move backwards whilst the engine is rotating in the same direction✓.
 - Make it possible for the vehicle to increase torque when moving up inclines. ✓
- (ANY TWO/ANY OTHER RELEVANT ANSWER) (2)
- 3.7
- Ensure that vehicle is horizontal when checking the oil level. ✓
 - Remove the filler plug.✓
 - Check if oil is coming through the filler plug hole. ✓
 - If not, then fill oil through the hole till the oil starts running out.✓
 - Replace and tighten the filler plug to specifications. ✓ (5)
- [20]

QUESTION 4

- 4.1 A = Atmospheric air inlet✓
B = Brake fluid return from wheel cylinders✓
C = Brake fluid return to master cylinder✓
D = Engine intake manifold vacuum at both sides of the piston✓ (4)
- 4.2 Resting✓ (1)
- 4.3 4.3.1 A✓
4.3.2 C✓
4.3.3 D✓
4.3.4 B✓
4.3.5 E✓ (5 × 1) (5)
- 4.4 It increases the braking force at the rear brakes when the brakes are applied with load on the vehicle.✓✓ (2)
- 4.5 At the rear of the vehicle and is connected between the rear axle and the chassis✓✓ (2)
- 4.6 Water is absorbed by the brake fluid and can cause rust in the brake system.✓

Sludge forms in the brake fluid due to residue which can cause blockages or lessen the amount of brake fluid passing through the system.✓

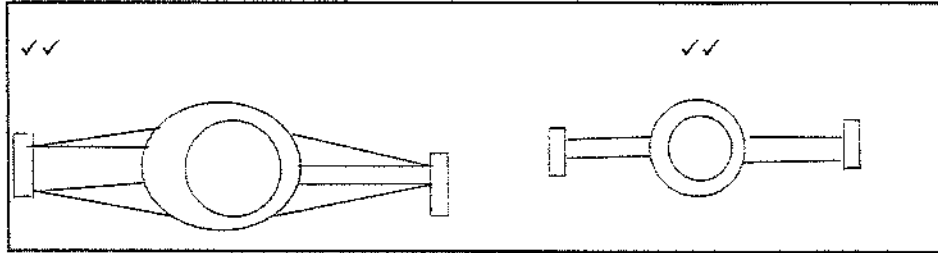
Additives within brake fluid get used up during time decreasing the ability of brake fluid not to freeze at very low temperatures or to boil at very high temperatures thus decreasing the efficiency of the brake fluid.✓
(ANY ONE /ANY OTHER RELEVANT ANSWER) (1)
- 4.7 Jack up the wheels to be adjusted, to enable them to be turned by hand.✓
Adjust each lining by means of an adjuster. ✓
Adjust against the drum until the wheel cannot be turned by hand.✓
Loosen the adjuster until the wheel can be turned by hand.✓
Remember each wheel consists of two linings to be adjusted.✓ (5)
[20]

QUESTION 5

- 5.1 A = Pinion pilot bearing✓
B = Pinion ✓
C = Taper bearings✓
D = Flange✓
E = Differential housing✓
F = Preload adjustment nut✓ (6)
- 5.2 On the pinion shaft✓, behind the pinion gear✓ (2)

- 5.3 To ensure that the pinion meshes at the correct depth on the crown wheel.✓ (1)
- 5.4 On the pinion shaft✓, between the flange and the bearing.✓ (2)
- 5.5 To ensure that the pinion does not move axially.✓ (1)

5.6



BUILT-UP BANJO-TYPE DIFFERENTIAL HOUSING

BANJO-TYPE DIFFERENTIAL HOUSING

(4)

- 5.7
 - More suitable to use on tandem rear-axle drives✓
 - Drive shaft is positioned further from the ground which enables vehicle to move more freely on bumpy surfaces✓
 (2)
- 5.8 SAE 140 oil✓ (1)
- 5.9 Phosphorous bronze✓ (1)

[20]

TOTAL: 100