



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

MOTOR TRADE THEORY N2

1 December 2023

This marking guideline consists of 5 pages.

QUESTION 1

- | | | | | |
|-----|--------|-----------|----------|------|
| 1.1 | 1.1.1 | D✓ | | |
| | 1.1.2 | C✓ | | |
| | 1.1.3 | B✓ | | |
| | 1.1.4 | A✓ | | |
| | 1.1.5 | B✓ | | |
| | 1.1.6 | C✓ | | |
| | 1.1.7 | D✓ | | |
| | 1.1.8 | D✓ | | |
| | 1.1.9 | A✓ | | |
| | 1.1.10 | B ✓ or C✓ | | |
| | | | (10 × 1) | (10) |
-
- | | | | | |
|-----|--------|----|----------|------|
| 1.2 | 1.2.1 | E✓ | | |
| | 1.2.2 | G✓ | | |
| | 1.2.3 | L✓ | | |
| | 1.2.4 | C✓ | | |
| | 1.2.5 | A✓ | | |
| | 1.2.6 | I✓ | | |
| | 1.2.7 | H✓ | | |
| | 1.2.8 | B✓ | | |
| | 1.2.9 | D✓ | | |
| | 1.2.10 | K✓ | | |
| | | | (10 × 1) | (10) |
- [20]**

QUESTION 2

- | | | | |
|-----|--|--|-----|
| 2.1 | A – tripod joint✓
B – driveshaft✓
C – rubber boot/bellows✓
D – inner race/star✓
E – cage✓
F – housing/outer race/cup✓ | | (6) |
|-----|--|--|-----|
-
- | | | | |
|-----|---|--|-----|
| 2.2 | The pressure springs on the pressure plate✓ move the release levers towards the release bearing✓ and moves the pressure plate towards the flywheel✓. Friction between the pressure plate, clutch plate and flywheel causes the clutch plate to engage.✓ | | (5) |
|-----|---|--|-----|
-
- | | | | |
|-----|--|-------------------|-----|
| 2.3 | <ul style="list-style-type: none"> Prevents slipping.✓ Ensures that the release bearing is not in continual contact with the release levers on the pressure plate✓ Too much free-play causes difficult gear selection.✓ | (Any two answers) | (2) |
|-----|--|-------------------|-----|
-
- | | | | |
|-----|---|--|-----|
| 2.4 | <ul style="list-style-type: none"> Cables can break unexpectedly✓ Clutch action is much harder✓ Water and dust causes the cable to seize ✓ | | (3) |
|-----|---|--|-----|

- 2.5
- Rotary or vane pumps✓
 - Actuators✓
 - Air springs/hydraulic actuators✓
 - Height sensors✓
 - ECU✓
- (Any 2 × 1) (2)
[18]

QUESTION 3

- 3.1
- 3.1.1
- A – synchro hub✓
 - B – shifting keys✓
 - C – synchro sleeve✓
 - D – spring✓
 - E – synchro sleeve✓
- (5)
- 3.1.2
- It synchronises the speed of the gear✓ to enable smooth engagement.✓
- (2)
- 3.1.3
- The selector fork.✓
- (1)
- 3.2
- From the input shaft✓
 - to the countershaft✓
 - across to the matching 1st gear ✓
 - up to first gear✓
 - to the synchro ring, sleeve and hub✓
 - to the output shaft✓
- (6)
- 3.3
- 3.3.1
- They transmit torque equally✓or to the wheel with the most resistance in slippery conditions.✓
- (2)
- 3.3.2
- It is more expensive than a conventional differential.✓
 - It requires special oil.✓
- (2)
- 3.3.3
- Incorrect tooth contact pattern✓
 - Premature gear failure✓
 - Premature bearing failure✓
 - Noisy operation✓
- (4)
[22]

QUESTION 4

- 4.1
- Ovality refers to the out-of-round measure of a cylinder.✓ It is measured with an inside micrometer,✓ near the top of the cylinder and bottom of the cylinder✓ in the part of the piston travel with readings at 90 degrees✓ to each other and readings are compared to manufacturers specifications.
- (4)

- 4.2
- Clogged fuel filter✓
 - Worn fuel pump✓
 - Faulty fuel pressure regulator✓
 - Fuel line leaks✓
- (Any 3 × 1) (3)
- 4.3
- A – needle and seat valve✓
 - B – main jet✓
 - C – throttle valve✓
 - D – discharge nozzle✓
 - E – venturi✓
 - F – Float unit ✓
- (6)
- 4.4
- 4.4.1 battery✓
 - 4.4.2 Ignition coil✓
 - 4.4.3 HT leads✓
 - 4.4.4 condenser✓
 - 4.4.5 LT leads✓
- (5 × 1) (5)
- 4.5
- Hard starting✓
 - Pinging✓
 - High idle speed✓
 - Engine running on when switching off ✓
- (Any two answers) (2)
- 4.6
- Camshaft position sensor✓
 - Crankshaft position sensor✓
 - Ignition ecu ✓
- (Any 2 × 1) (2)
- [22]**

QUESTION 5

- 5.1.
- A – Trailing arm✓
 - B – Coil spring✓
 - C – axle beam/frame✓
 - D – track rod/bar✓
 - E – shock absorber✓
- (5)
- 5.2
- 5.2.1
 - No adjustment✓
 - Air in the system ✓
 - Master cylinder faulty ✓

(Any 2 × 1)
 - 5.2.2
 - Overfilled master cylinder✓
 - Pistons seized✓
 - Over adjusted brakes✓
 - No brake pedal free-play✓

(Any 2 × 1)
 - 5.2.3
 - No brake fluid in the reservoir✓
 - Broken brake pipe/line✓
 - Master cylinder faulty ✓

(Any 2 × 1)
(3 × 2) (6)

5.3	• Vertical alignment✓ • Horizontal alignment✓ • High beam direction✓	(3)
5.4	5.4.1 Refrigerant is used to cool down the warm air.✓	
	5.4.2 Compressor is used to change refrigerant from gaseous state to liquid state.✓	
	5.4.3 Condenser is used to condense the refrigerant.✓	
	5.4.4 Evaporator provides cool air into the vehicle passenger area.✓	
		(4 × 1) (4)
		[18]
	TOTAL:	100