



# higher education & training

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Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

## **MARKING GUIDELINE**

**NATIONAL CERTIFICATE**  
**NOVEMBER EXAMINATION**  
**MOTOR TRADE THEORY N1**

**11 NOVEMBER 2014**

**This marking guideline consists of 6 pages.**

**QUESTION 1**

- |     |  |             |                    |
|-----|--|-------------|--------------------|
| 1.1 | 1.1.1 D<br>1.1.2 C<br>1.1.3 A<br>1.1.4 B<br>1.1.5 A<br>1.1.6 B<br>1.1.7 B<br>1.1.8 D<br>1.1.9 C<br>1.1.10 C  | (10 × 1)    | (10)               |
| 1.2 | A – Dipstick<br>B – Oil pump<br>C – Strainer<br>D – Sump<br>E – Oil-filler cap<br>F – Oil-pressure switch<br>G – Oil filter<br>H – Oil<br>I – Oil drain plug | (9 x 1)     | (9)                |
| 1.3 | <ul style="list-style-type: none"> <li>• Difficult to start</li> <li>• Engine fails to crank</li> </ul>  | (Any 1 x 1) | (1)<br><b>[20]</b> |

**QUESTION 2**

- |     |  |             |     |
|-----|--|-------------|-----|
| 2.1 | A – Cylinder head<br>B – Piston<br>C – Connecting rod<br>D – Big-end bearing<br>E – Crankshaft<br>F – Bearing caps             | (6 x 1)     | (6) |
| 2.2 | <ul style="list-style-type: none"> <li>• Weak oil pump</li> <li>• Cracked cylinder head</li> <li>• Weak compression</li> </ul> | (Any 2 x 1) | (2) |
| 2.3 | <ul style="list-style-type: none"> <li>• Splash system</li> <li>• Pressure system</li> </ul>                                   |             | (2) |

2.4 FIGURE 1 (hydrometer structure)

(5)

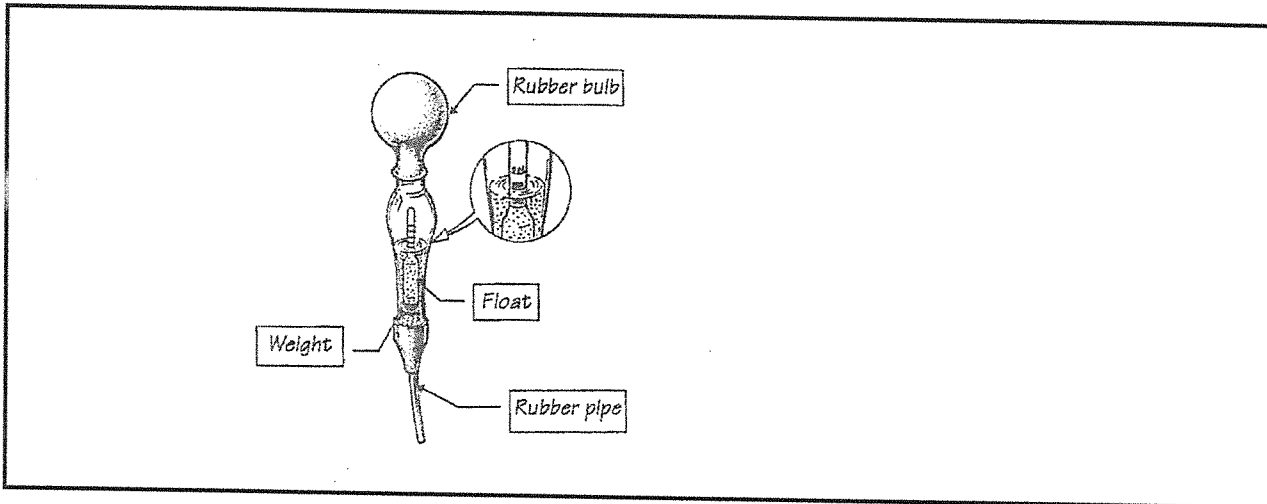


FIGURE 1

- 2.5
- Series connection of battery
  - Parallel connection of battery

(2)

- 2.6
- Prolonged discharging
  - Local chemical action in the cells
  - Insufficient or infrequent charging
  - The electrolyte level being too low
  - The specific gravity of the electrolyte being too low

(Any 3 × 1)

(3)  
[20]

QUESTION 3

3.1 FIGURE 2 (valve structure)

(6)

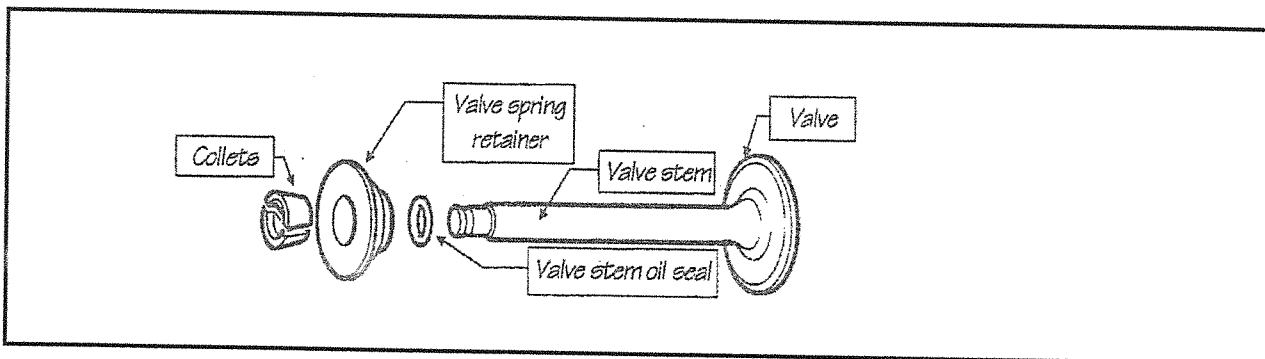


FIGURE 2

- 3.2 Oil rings and compression rings (2)
- 3.3
- To prevent the chain belt from sleeking against lamina cover
  - To ensure that the chain belt stays on the sprockets
- (2)
- 3.4
- A – Camshaft
  - B – Tensioner
  - C – Timing belt
  - D – Connecting rod
  - E – Camshaft
  - F – Camshaft
  - G – Valve
  - H – Piston
- (8 x 1) (8)
- 3.5 3.5.1 Crankshaft
- Provides a constant turning force to the wheels
  - Changing reciprocating movement of piston into rotary motion
  - Distributes oil from main journal bearings to big end of the connecting rod
- (Any of the above) (1)
- 3.5.2 Flywheel
- \* It smoothes the engine.
  - \* It serves as a mounting surface for the clutch and pressure plate.
  - \* It engages the starter motor to crank the engine.
- (Any of the above) (1)
- [20]

**QUESTION 4**

- 4.1 4.1.1 True
- 4.1.2 True
- 4.1.3 True
- 4.1.4 False
- 4.1.5 False
- (5 x 1) (5)
- 4.2
- To transmit the torque smoothly from running engine
  - To allow gear changing when the vehicle is in motion
  - To give temporary neutral when the engine is running for gear selection
- (3)

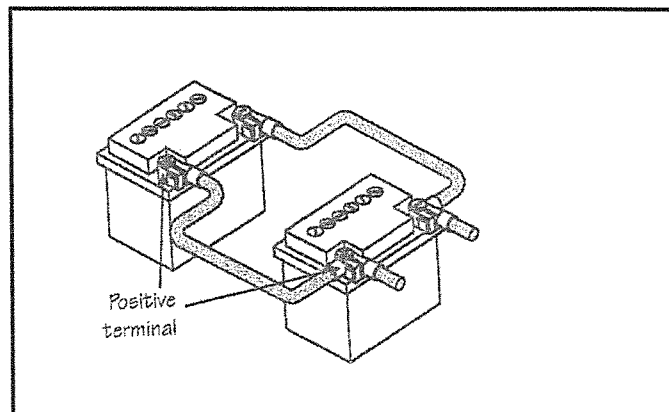
- 4.3
- Safety shoes must be worn all the time.
  - No loose cloth, sleeves, long hair in the workshop
  - Safety goggles or welding helmets must be worn.
  - Facial mask for asbestos dust from brake shoes
  - Ear guards must be worn when working in a noisy place.
  - Gloves must be worn when working with acids.
  - A creeper to protect your body from cold floor
- (Any 3 x 1) (3)
- 4.4 Negligence; ignorance of the danger involved; fooling about tiredness or daydreaming; failure to use correct equipment; lack of skills through inadequate training; untidy or obstructed equipment. (Any 4 x 1) (4)
- 4.5 Release-lever broken spring  
Gearbox input shaft-bearing damaged  
Release bearing worn or damaged  
Input shaft splines of clutch excessively worn  
Broken or loose shock spring of clutch plate (5)

**[20]****QUESTION 5**

- 5.1 FIGURE 3 (battery parallel connection) (4)

**PARALLEL CIRCUIT**

The two 12 V batteries are connected in parallel to form a 12 V battery that will last longer and have a greater cranking capacity than one 12 V battery. This arrangement is used on smaller trucks with a diesel engine that is difficult to start. The two batteries will supply sufficient current to the 12 V starter motor to start the engine.

**FIGURE 3**

- 5.2 A – Radial ply; B – Cross ply (2)
- 5.3
- Longer tyre life; assures vehicle safety; comfortable ride
  - Prevent excessive heat built-up; proper tyre inflation allows full tyre area to touch the road
- (Any 2 x 1) (2)
- 5.4 Cheap to produce and assemble; keep pressure for a longer period; increase safety; they are lighter in mass; cooler turning (Any 3 x 1) (3)

5.5	5.5.1	Trolley jack		
	5.5.2	Hacksaw		
	5.5.3	Ring squeezer		
	5.5.4	Veneer calliper		
	5.5.5	Centre punch		
	5.5.6	Vice grip (pipe pliers)		
	5.5.7	Outside micrometer		
	5.5.8	Lead light		
	5.5.9	Clamp screw	(9 x 1)	(9)
				<b>[20]</b>
			<b>TOTAL:</b>	<b>100</b>