

# higher education & training

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

## **MARKING GUIDELINE**

**NATIONAL CERTIFICATE  
APRIL EXAMINATION  
MOTOR TRADE THEORY N1  
27 MARCH 2013**

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

**QUESTION 1**

- 1.1.1 D
- 1.1.2 D
- 1.1.3 C
- 1.1.4 C
- 1.1.5 B
- 1.1.6 D
- 1.1.7 C
- 1.1.8 C
- 1.1.9 A
- 1.10 D
- (10 × 1) (10)
- 1.2 (a) Inlet or induction stroke.
- Piston moves from TDC towards BDC, a vacuum is created the inlet valve opens allowing airfuel mixture to enter the cylinder.
- (b) Compression stroke.
- Piston moves from BDC to TDC with both valves closed, the mixture is compressed.
- (c) Power stroke.
- When the piston reaches top dead centre, the spark plug ignites, the compressed mixture explodes, with both valves still closed, by forcing the piston to go back to BDC.
- (d) Exhaust stroke.
- Piston moves from BDC to TDC, the exhaust valve opens and burnt mixtures is forced to exit through the exhaust valve and clear the chamber.
- (5)
- 1.3 A Tensioner  
B Guide  
C Timing chain  
D Securing bolt
- (4)
- 1.4 To keep the station of the timing belt constant.
- (1)  
**[20]**

**VRAAG 2**

- 2.1 A Big end journal  
 B Timing chain gear  
 C Balance weight  
 D Oil hole  
 E Rear flange  
 F Main journal (6)

2.2.1 Crankshaft – any ONE of these.

- It provides a constant turning force to the wheels
- It changes the reciprocating motion of the piston to a rotary motion of the drive wheels.
- It distributes oil from the main bearing. (1)

2.2.2 Flywheels – any ONE of these.

- It smoothes out engine speed and keeps the crankshaft spinning between power stroke.
- It serves as a mounting surface for the clutch and pressure plate assembly.
- -It engages the starter motor to crank the engine. (1)

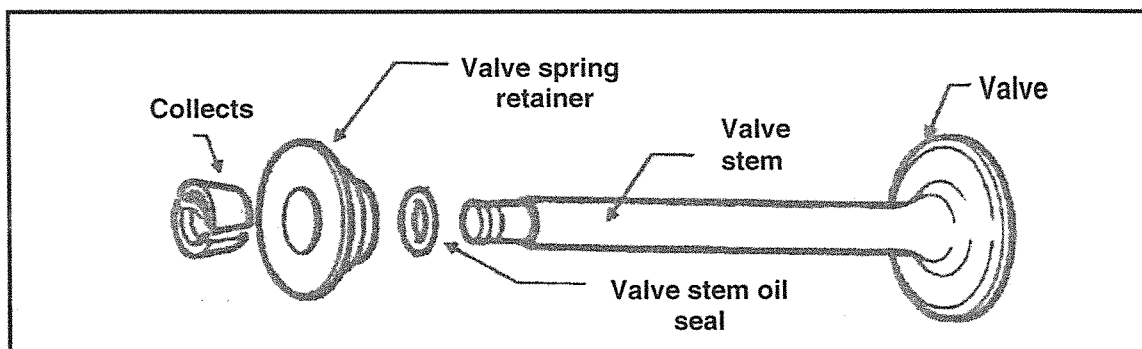
2.2.3 Camshaft – any ONE of these.

- It open and close the valve.
- It drives components like mechanical petrol pump, oil pump and distributors. (1)

2.2.4 Valves- any one of these,

- It opens the right moment to allow air fuel mixture to enter the cylinder.
- -It closes at the right moment to seal off the cylinder. (1)

2.3



**FIGURE 2.3**

(6)

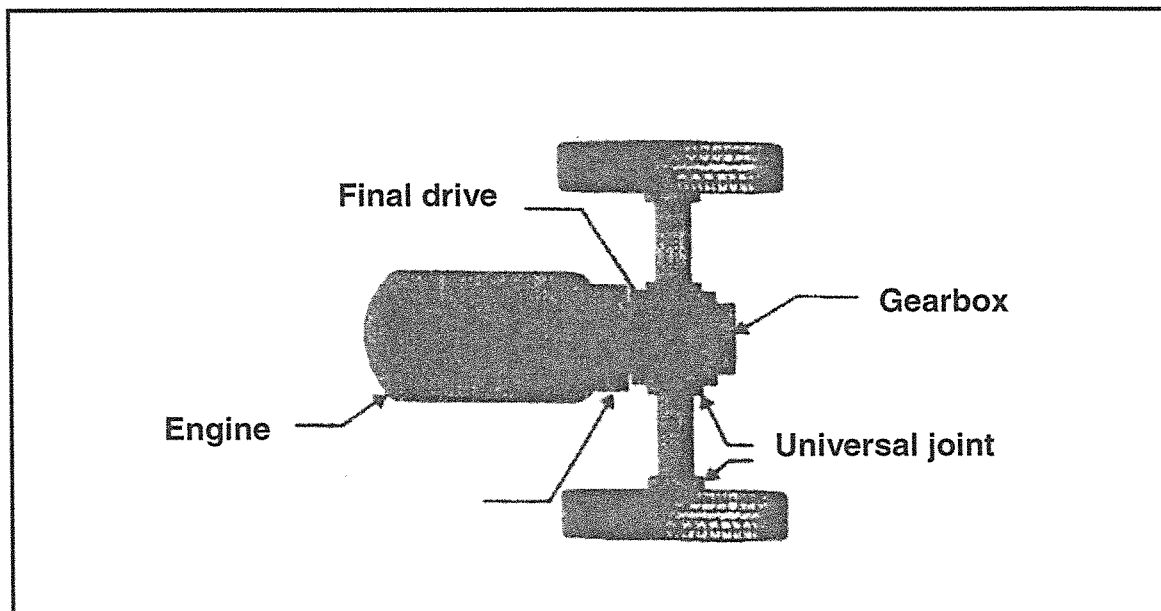
- 2.4      2.4.1      Oil scraper ring
- 2.4.2      Compression ring (2)
- 2.5      • To prevent timing chain from slapping against timing cover.  
            • It ensures that the chain stays on the sprockets. (2)

[20]

**QUESTION 3**

- 3.1.      • The engine gearbox or differential can be removed separately from one another. (2)  
            • Very good traction because of load on the driving axle.
- 3.2      • Higher maintenance cost  
            • Heavy steering feel because of increased weight on front wheels  
            • Higher initial cost due to complicated drive arrangement (2)  
            • Increased tyre wear

3.3



(6)

- 3.4      A      Eccentric  
            B      Cam  
            C      Spring  
            D      Plunger  
            E      Inlet valve  
            F      Outlet valve (6)

- 3.5 3.5.1 Oil pump – to deliver adequate volume of oil around the engine at a suitable pressure.
- 3.5.2 Oil sump – it serves as a reservoir/storage of the lubricating oil for the engine.
- 3.5.3 Oil filter – to clean or remove any dirt or foreign matter from the oil.
- 3.5.4 Oil seal – to stop oil from escaping the engine and prevent dirt and dust from entering the engine.

(4)  
[20]**QUESTION 4**

- 4.1 4.1.1 True
- 4.1.2 False
- 4.1.3 True
- 4.1.4 False
- 4.1.5 True

(5)

PETROL ENGINE	DIESEL ENGINE
<ul style="list-style-type: none"> <li>• The combustion chamber is large.</li> <li>• During induction stroke it takes in a mixture of fuel and air.</li> <li>• During compression stroke the air and fuel mixture are compressed.</li> <li>• Combustion takes place by means of a sparks plug.</li> </ul>	<ul style="list-style-type: none"> <li>• The combustion chamber is small.</li> <li>• During induction stroke it takes in clean air only.</li> <li>• During compression stroke only air is compressed.</li> <li>• Combustion takes place when diesel fuel is injected into the compressed hot air.</li> </ul>

(4)

- 4.3 SAE stands for Society of Automotive Engineers.

(1)

- 4.4 A Radiator cap  
B Radiator  
C Radiator fan  
D Cooling air  
E Water pump  
F Water hose  
G Water jackets

(7)

- 4.5 A Direct drive fans  
B Indirect drive fans/Visco fan  
C Electric fans

(3)  
[20]

**QUESTION 5**

- 5.1.      • It provides an air cushion between the road and the car wheels  
             • To provides friction between the roads and wheels.  
             • To supports the weight of the vehicle  
             • To offer the minimum rolling resistance to motion.  
             • To give safe operation up to the maximum speed of the vehicle.  
             • To give a comfortable ride.  
             • To provides quiet, straight – ahead running and freedom from squeal on  
                cornering and Braking.
- (Any 3 × 1)      (3)
- 5.2      A     Radial ply  
             B     Cross ply
- (2)
- 5.3      5.3.1     Tyre under-inflation  
             5.3.2     Tyre with excessive-camber  
             5.3.3     Tyre over-inflation
- (3)
- 5.4      195 – Tyre width  
             195/75 SR 14  
             75 – Tyre height/profile  
             S – Maximum speed  
             R – Radial ply  
             14 – Rim size
- (Any 3 × 1)      (3)
- 5.5      • Prolonged discharging.  
             • Local chemical action in then cells, due to entry of dirt and impurities  
             • Insufficient or infrequent charging.  
             • The electrolyte level being too low.  
             • Specific gravity of electrolyte being too low.
- (Any 2 × 1)      (2)
- 5.6      5.6.1     Trolley jack  
             5.6.2     Hack saw  
             5.6.3     Ring squeezer  
             5.6.4     The Venire calliper  
             5.6.5     Centre punch  
             5.6.6     Vice-grip  
             5.6.7     Outside micrometer
- (7)  
 [20]

**TOTAL:    100**