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

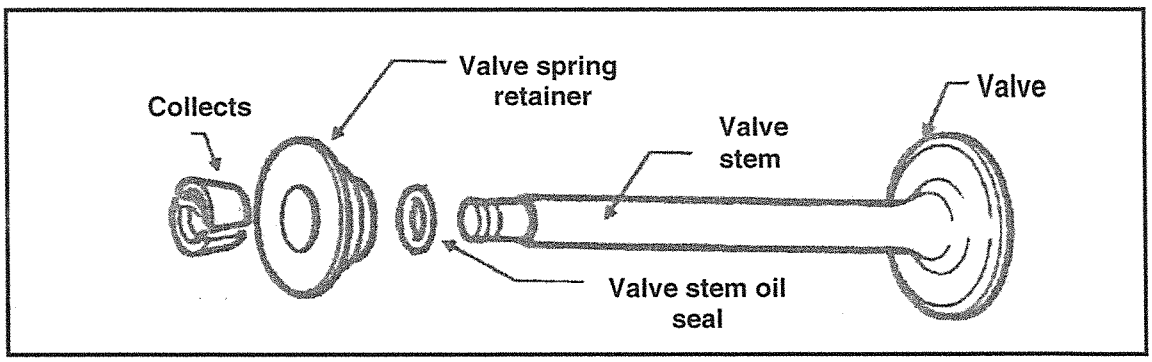


FIGURE 2.3 (6)

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)

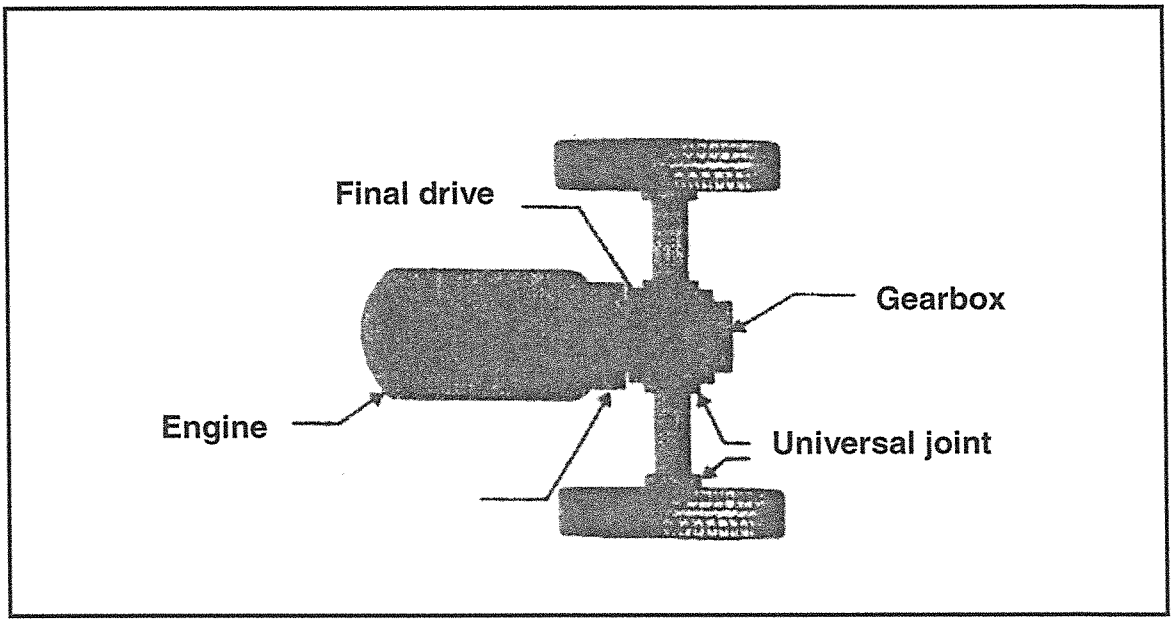
[20]

QUESTION 3

3.1.
- The engine gearbox or differential can be removed separately from one another.
- Very good traction because of load on the driving axle. (2)

3.2
- Higher maintenance cost
- Heavy steering feel because of increased weight on front wheels
- Higher initial cost due to complicated drive arrangement
- Increased tyre wear (2)

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)

4.2

PETROL ENGINE	DIESEL ENGINE
• The combustion chamber is large. • During induction stroke it takes in a mixture of fuel and air. • During compression stroke the air and fuel mixture are compressed. • Combustion takes place by means of a sparks plug.	• The combustion chamber is small. • During induction stroke it takes in clean air only. • During compression stroke only air is compressed. • Combustion takes place when diesel fuel is injected into the compressed hot air.

(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