



NZQA accredited and registered provider

Unit Standard 229

PRACTICE PAPER - ANSWER BANK

Assessors Note:

This answer bank should be used as the primary resource when marking students work. However, responses to some questions may be subjective and tutors are advised to exercise their professional judgement when making assessment decisions.

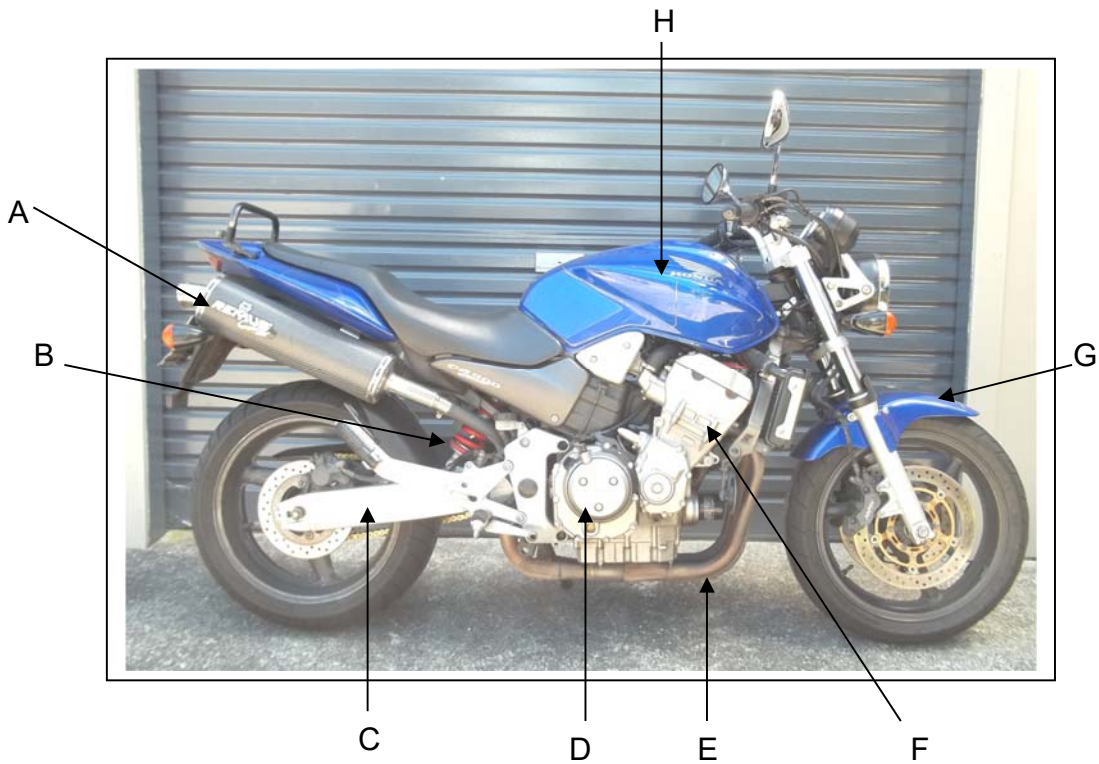
ELEMENT ONE

Identify locations and layout of systems and main components on motor vehicles.

1. From the list provided identify the components labelled A-H in the following diagram.

- | | |
|-----------------|---------------------|
| Mudguard | Engine |
| Exhaust muffler | Fuel tank |
| Rear swing arm | Rear shock absorber |
| Exhaust system | Gear box |

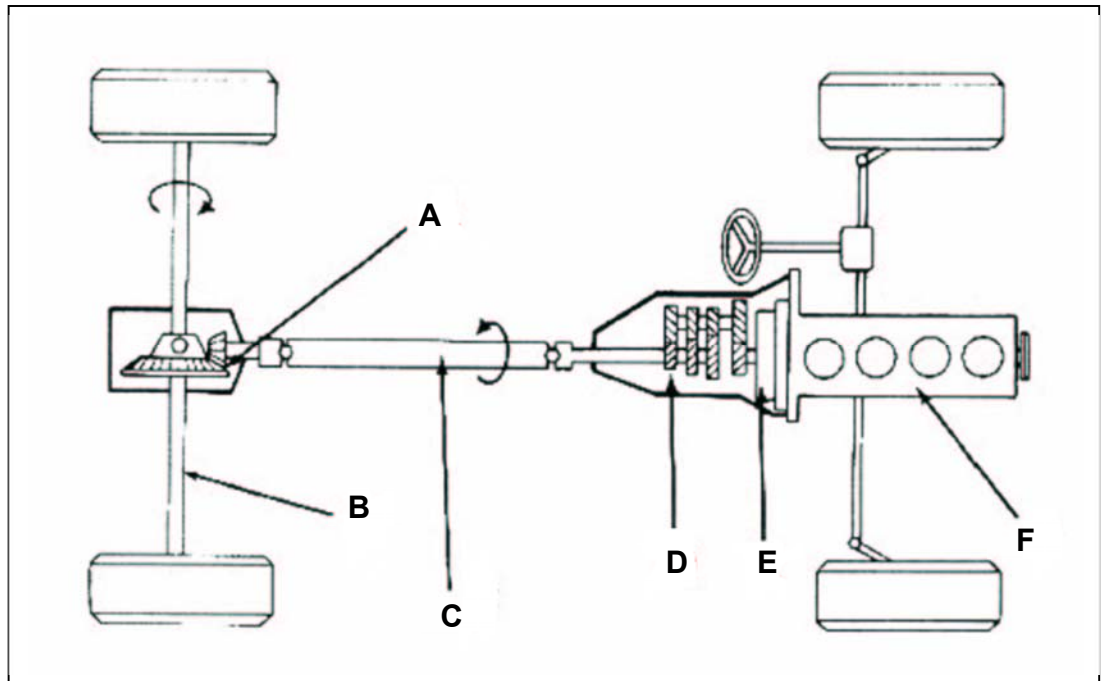
A	Exhaust muffler	E	Exhaust system
B	Rear shock absorber	F	Engine
C	Rear swing arm	G	Mudguard
D	Gear box	H	Fuel tank



2. From the list provided, identify the drive train and transmission components labelled A-F in the following diagram.

Clutch
Final drive
Drive shaft

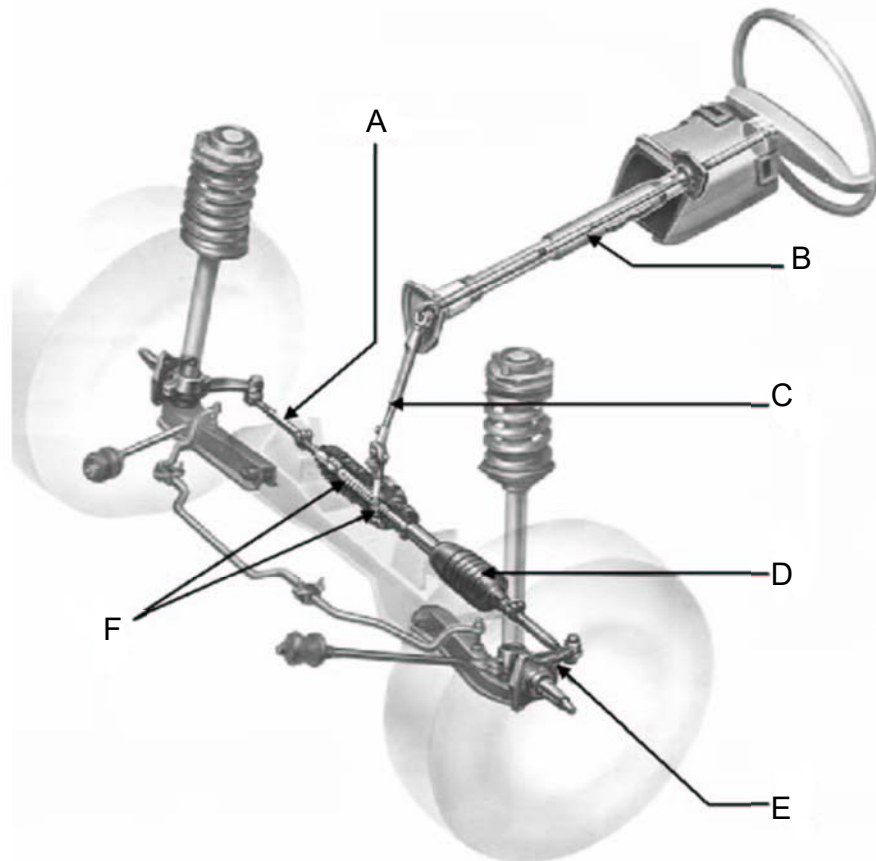
Manual transmission
Engine
Rear drive axle



A	Final drive	B	Rear drive axle
C	Drive shaft	D	Manual transmission
E	Clutch	F	Engine

3. From the list provided identify the steering system and name the components labelled A-F on the diagram below.

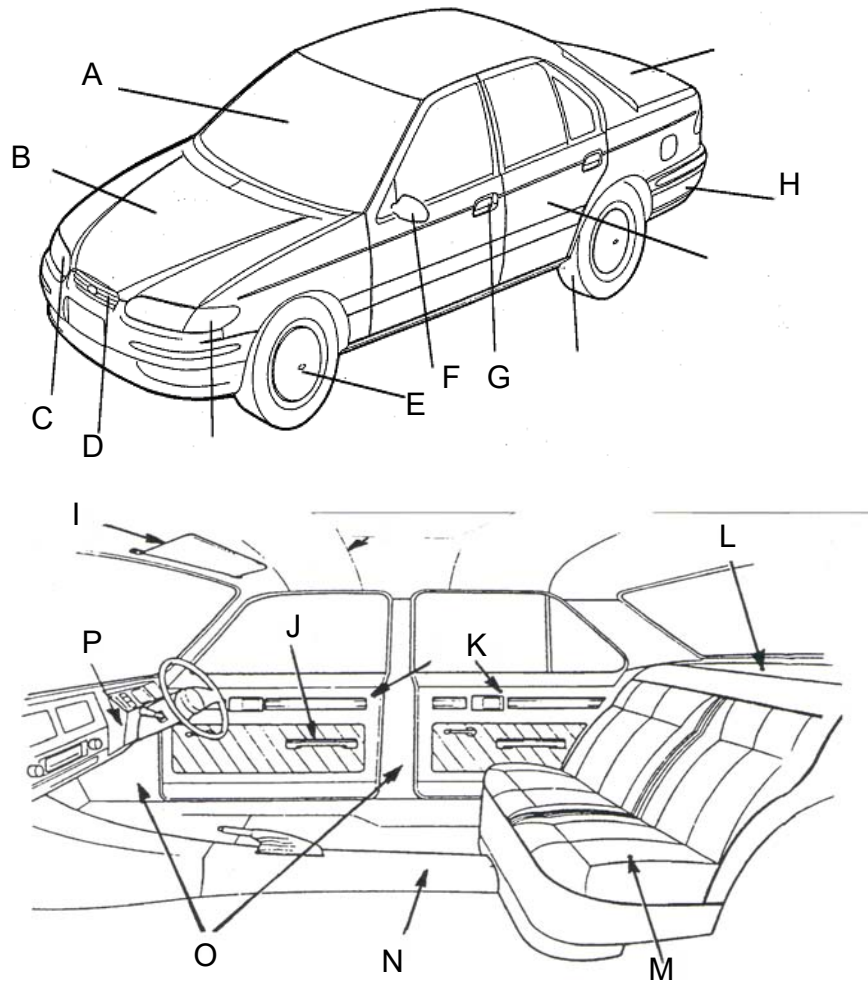
- Intermediate shaft Rack and pinion Steering column
 Steering rack boot Tie rod Radius arm/spindle



Steering System: Rack and pinion

A	Tie Rod	B	Steering column
C	Intermediate shaft	D	Steering rack boot
E	Radius ram	F	Rack and pinion

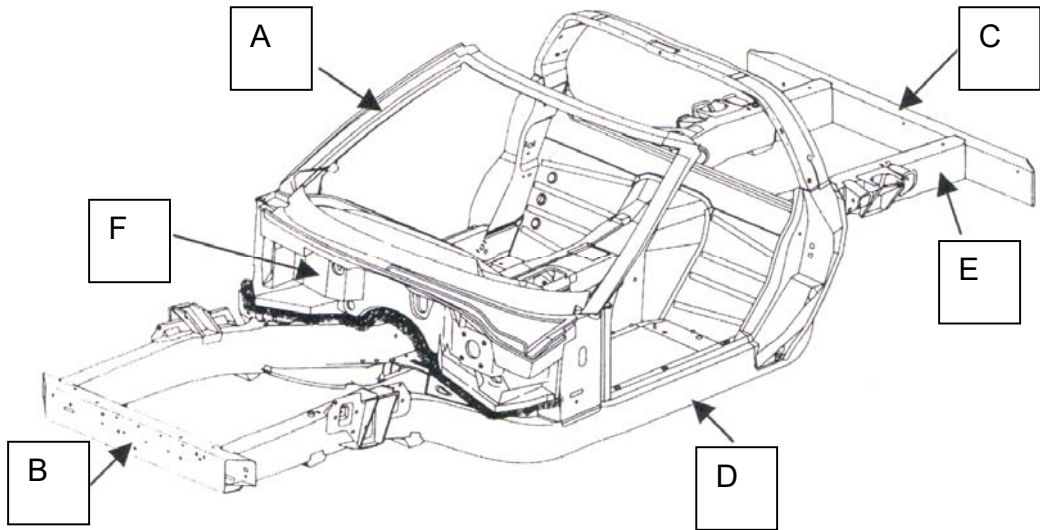
4. From the list provided identify the components labelled A-P in the following diagrams.



A	Windscreen	I	Sun visor
B	Bonnet	J	Arm rest
C	Head light	K	Interior door panel
D	Grille	L	Rear shelf
E	Wheel cover	M	Rear seat
F	Side mirror	N	Carpet
G	Exterior door handle	O	Kick panel/centre pillar
H	Rear bumper	P	Dash panel

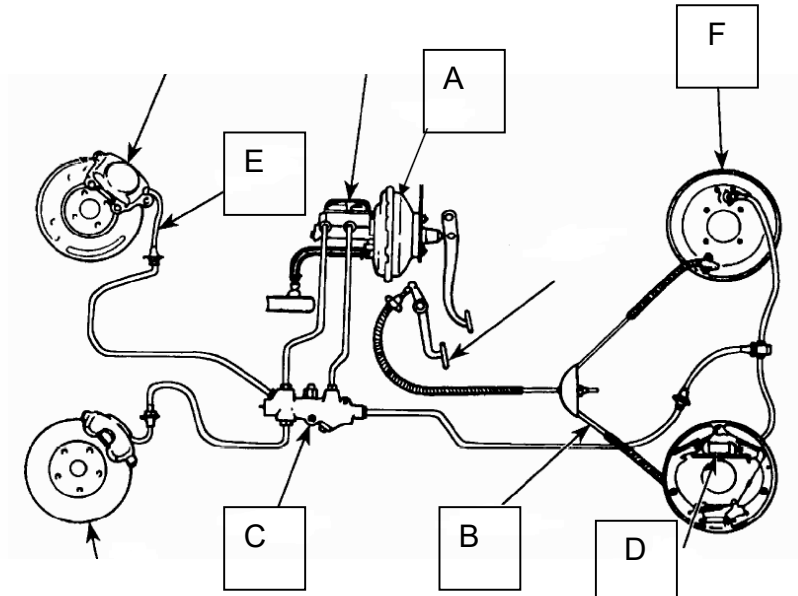
5. Refer to the list provided to match each chassis component with its correct location in the diagram below. Write the appropriate letter in the box next to its arrow.

- | | | | |
|----|------------------|----|----------------------|
| A. | Windscreen Frame | B. | Front Impact beam |
| C. | Rear Impact beam | D. | LH Side Chassis Rail |
| E. | LHR Chassis Rail | F. | Firewall |



6. Refer to the list provided to match each brake drum component with its correct location in the diagram below. Write the appropriate letter in the box next to its arrow.

- | | | | |
|----|-------------------|----|---------------------|
| A. | Brake booster | B. | Parking Brake Cable |
| C. | Combination valve | D. | Wheel cylinder |
| E. | Brake hose | F. | Drum brake |



7. Draw an arrow on the diagram below to indicate the location of the front forks.

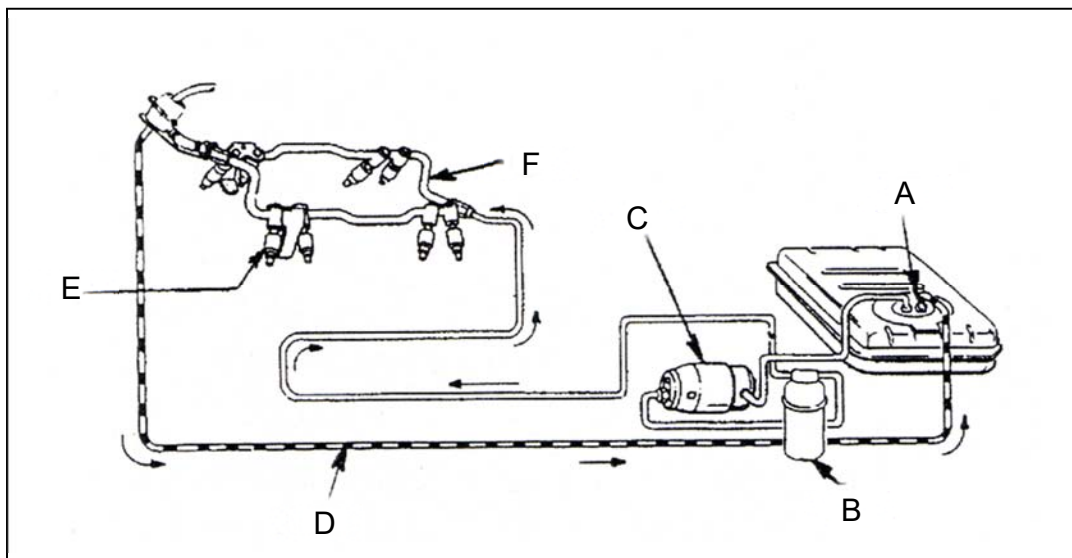


8. From the list provided identify the components labelled A-F in the following diagram.

Fuel pressure line
 Fuel return line
 Fuel injectors

Fuel pump
 Fuel filter
 Fuel pick up

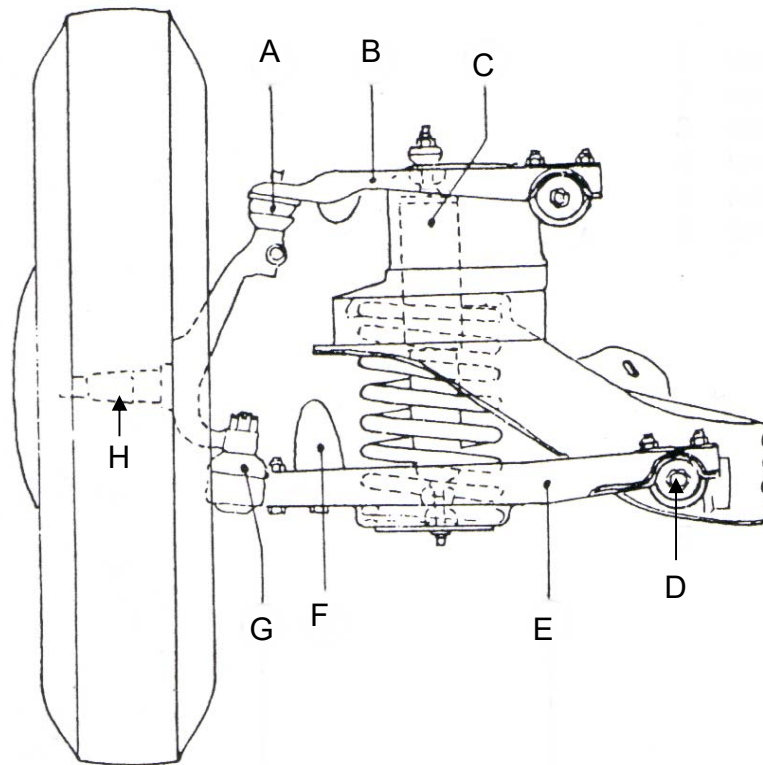
A	Fuel pick up	B	Fuel filter
C	Fuel pump	D	Fuel return line
E	Fuel injectors	F	Fuel pressure line



9. From the list provided identify the components labelled A-H in the following diagram.

- | | |
|------------------|----------------------------|
| Stub axle | Lower suspension arm pivot |
| Shock absorber | Upper suspension arm |
| Lower ball joint | Lower suspension arm |
| Upper ball joint | Rubber bump stop |

A	Upper ball joint	B	Upper suspension arm
C	Shock absorber	D	Lower suspension arm pivot
E	Lower suspension arm	F	Rubber bump stop
G	Lower ball joint	H	Stub axle

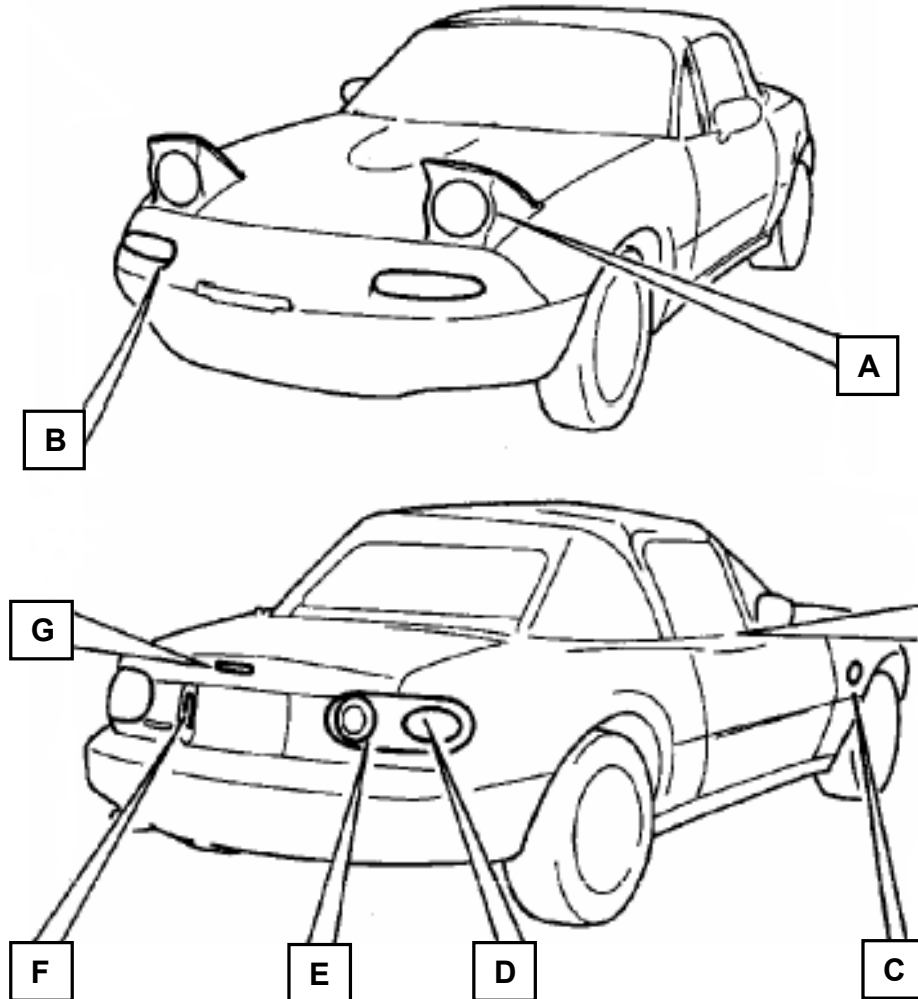


10. From the list provided identify the components labelled A-G in the following diagram.

RH front side indicator
 Stop and tail light
 RH front sidelight / indicator

Number plate light
 High mount stop light

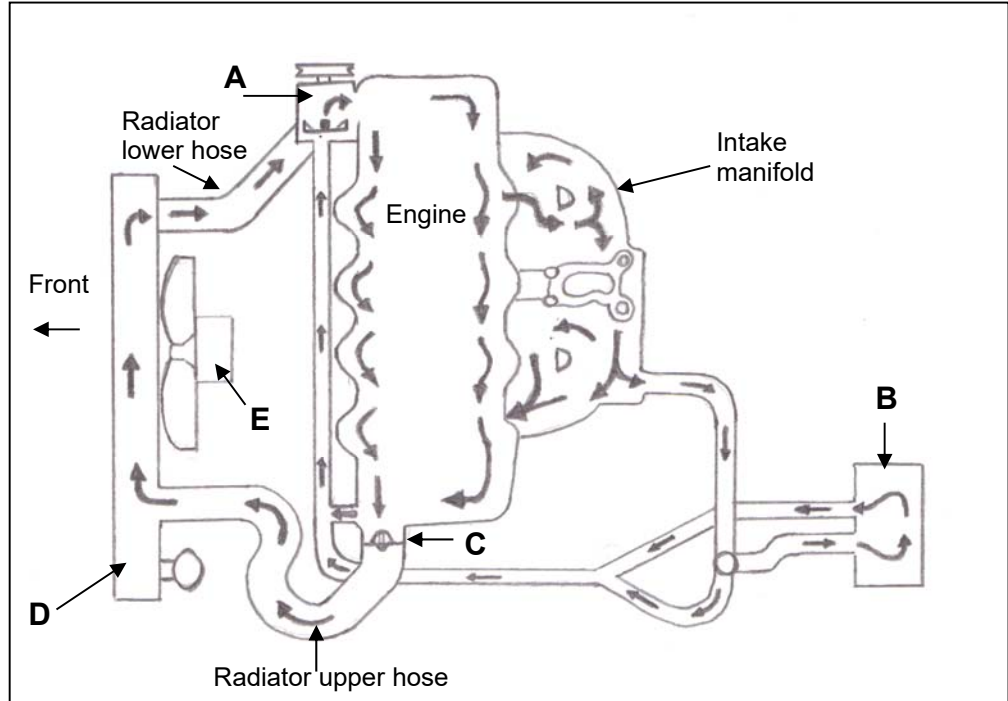
Headlight
 RH rear indicator light



A	Headlight	B	RH front sidelight / indicator
C	RH front side indicator	D	RH rear indicator light
E	Stop and tail light	F	Number plate light
G	High mount stop light		

11. From the list provided identify the components labelled A-E in the following diagram.

Radiator Heater Core Thermostat Fan Water pump



A	Water pump	B	Heater Core
C	Thermostat	D	Radiator
E	Fan		

ELEMENT TWO

Demonstrate knowledge of the functions of motor vehicle systems and their main components.

1. Identify each of the following vehicle system components or assemblies (labelled A-N) from the list provided and outline their main function:

- Component A:** Cylinder head
Function: To house the inlet and exhaust passages and the combustion chamber as well as the valve mechanism and water jackets.
- Component B:** Engine block
Function: To house the cylinder bore, the oil galleries and cooling system chambers.
- Component C:** Differential
Function: Turns the direction of rotation through ninety degrees and provides a reduction gearing. Allows one driven wheel to turn more quickly than the other.
- Component D:** Automatic transmission
Function: Changes gears automatically using fluid pressure, a torque converter, clutches and bands.
- Component E:** Brake master cylinder
Function: Sends brake fluid under pressure to the wheel cylinders and/or calipers when the brake pedal is applied.
- Component F:** Drum brake assembly
Function: Use a pair of brake shoes to push against the inside surface of the brake drum to slow the vehicle.
- Component G:** Shock absorber
Function: Dampens out the up and down movement of the vehicle after travelling over a bump.
- Component H:** Rack and pinion steering system
Function: Uses rack and pinion linkages, allowing the driver to steer the vehicle by changing rotary motion into a side to side motion.
- Component I:** Starter Motor
Function: Battery operated unit that cranks the engine over for starting.
- Component J:** Battery
Function: Stores electrical energy to supply power to units on demand.

Component K: Air filter
Function: To remove dirt and dust from the air before the air enters the engine.

Component L: Inlet manifold
Function: Directs the air or air/fuel mixture evenly to each engine cylinder

Component M: Thermostat
Function: Controls the engine operating temperature. Gets the engine to operating temperature as quickly as possible and keeps the temperature there

Component N: Radiator
Function: Cools the hot coolant from the engine by air flow through the core fins

2. Please circle True or False as appropriate.

The purpose of an internal combustion engine is to convert chemical energy into mechanical energy to propel the vehicle it is fitted to.

True

3. Match up the drive train components with their functions. For example:

A – Manual clutch assembly = 7 – Engages and disengages engine power to the transmission

A	Manual clutch assembly	A7	1	Carries drive from the transmission to the final drive assembly
B	Automatic transmission	B4	2	Transmits drive from the differential to the wheel
C	Axle shaft	C2	3	Drive is divided and allows for different wheel speeds
D	Driveshaft (propeller shaft)	D1	4	Uses fluid pressure to change gears automatically
E	Final drive assembly	E3	5	Makes it possible to have different wheel speeds and torque
F	Manual transmission	F5	6	A fluid coupling that can multiply torque
G	Torque converter	G6	7	Engages and disengages engine power to the transmission

This document is the copyright of Fairview Educational Services Limited and may not be reproduced in any form without its express written permission.

4. Match the braking and steering and suspension components with their functions. For example:

A – Master cylinder = 10 – Directs brake fluid pressure to the braking system

A	Master cylinder	A10	1	Transmits the turning motion of the steering wheel to steering rack or box
B	Brake booster	B7	2	Turning forces that are transmitted through a worm gear and ball bearings
C	Coil spring	C5	3	A pair of non-rotating brake pads that are pinched against a rotating disc
D	Disc brake assembly	D3	4	Steel leaves sandwiched together that flex to absorb road shocks
E	Leaf spring	E4	5	Absorbs road bumps by compressing and stretching
F	Parking brake	F8	6	Reduces body roll when cornering
G	Stabiliser bar	G6	7	Multiplies the drivers foot pressure to the master cylinder
H	Steering box	H2	8	An independent braking system that applies the brakes mechanically usually by cable
I	Steering column assembly	I1	9	Attaches the suspension arms to the vehicle and allows them to swing
J	Suspension pivot	J9	10	Directs brake fluid pressure to the braking system

5. Match the following electrical system components with their functions. For example:

A – Battery = 4 – Is used to store electrical energy for use when required

A	Battery	A4	1	Flashes 60 – 120 times per minute to alert other road users of an intention to turn
B	Alternator	B8	2	Need to be correctly adjusted for maximum driver visibility
C	Headlights	C2	3	Are illuminated when the vehicle is braking
D	Indicator lights	D1	4	Is used to store electrical energy for use when required
E	Sidelights	E7	5	Delivers electrical energy to different systems around the vehicle
F	Starter motor	F9	6	Are illuminated to make vehicle more visible from the rear
G	Stop lights	G3	7	Are used in low visibility conditions and are mounted on the sides and corners of vehicles
H	Tail lights	H6	8	Is driven by the engine, runs electrical equipment and recharges the battery
I	Wiring loom	I5	9	Is used to turn the engine over to help start it

6. Match the components and their functions. For example:

A	Sub frames	A5	1	Fitted at the front and rear for vehicle body protection
B	Body panels	B6	2	To accommodate driver and passengers with comfort and safety
C	Bumpers	C1	3	Main rigid structure that the vehicle is built on
D	Chassis members	D3	4	For the driver to see through and provide wind and weather protection
E	Glass	E4	5	A removable section of the vehicle structure
F	Seat and interior trim	F2	6	Moulded into different shapes for good looks, strength and aerodynamics

