

Unit Standard **30436**

Demonstrate knowledge of an EFI system

Level 3 Credit 2 v1

Student Name:

School:

Date:

Marked By: _____ **Mark** _____ **%**

Feedback: **Excellent work**

Good work

Please attempt all questions

Please resubmit

USEFUL WEBLINKS

Octane rating

<http://youtu.be/7sLqbkmUrrg>

Additives

<http://youtu.be/yLmWzCV6CI8>

Eco Boost

<http://youtu.be/IFj5UIZx2cE>

Combustion

<http://youtu.be/WuCUGcqO5SE>

Emissions

<http://youtu.be/9MdE1W0IN0Y>

Engine Capacity

<http://youtu.be/3-ilzxawUAs>

Map Sensor

<http://youtu.be/gq4szm5Re0g>

EFI

<http://youtu.be/Jk3ln-AxgVc>

Throttle Position Sensor

http://youtu.be/GvXh1MH_KHQ

Idle Air Control Valve

<http://youtu.be/3tLtbI9OfYc>

Common Rail

<http://youtu.be/ip-grErbnls>

Fuel Injection

<http://youtu.be/TKmbkUohuk4>

http://youtu.be/Ir_TE3YB07k

REVIEW QUESTIONS ONE

Q1 Petrol is a mixture of two main substances. These are:

Q2 Explain the term “Octane Rating”.

Q3 List two grades of petrol that are sold in New Zealand and state their octane ratings and colours.

Grade

Grade

Rating

Rating

Colour

Colour

Q4 Explain what would happen if the fuel with a lower than recommended octane rating was used in a vehicle over a period of time.

Q5 Provide two advantages of using ethanol blended fuel.

Q6 Explain what stoichiometric ratio means when referring to petrol?

Q7 Complete the following statements.

Rich mixtures are used to _____ engine power. Rich mixtures increase _____, but an _____ mixture will _____ power, increase _____ and foul _____. _____ mixtures increase fuel _____, but too _____ a mixture will _____ power and could cause _____ damage.

Q8 Define abnormal combustion.

Q9 What is detonation and how is it caused?

Q10 What is Pre-ignition and how is it caused?

Q11 What is Spark knock and how is it caused?

Q12 What is dieseling and how is it caused?

Q13 Describe the cause of hydrocarbon exhaust emission.

Q14 Describe the cause of carbon monoxide emissions?

Q15 Exhaust emissions damage people's health. Give the effect on people's health of the following.

Carbon monoxide

Hydrocarbons

Oxides of nitrogen

REVIEW QUESTIONS TWO

- Q16 Give two reasons why petrol tank fuel caps are sealed.
- Q17 Give the reason why steel fuel lines cannot be completely fitted from the tank to the engine.
- Q18 Name the two types of Fuel injection systems.
- Q19 An EFI system has three subsystems. These are?
- Q20 What is the main purpose of an air flow meter?

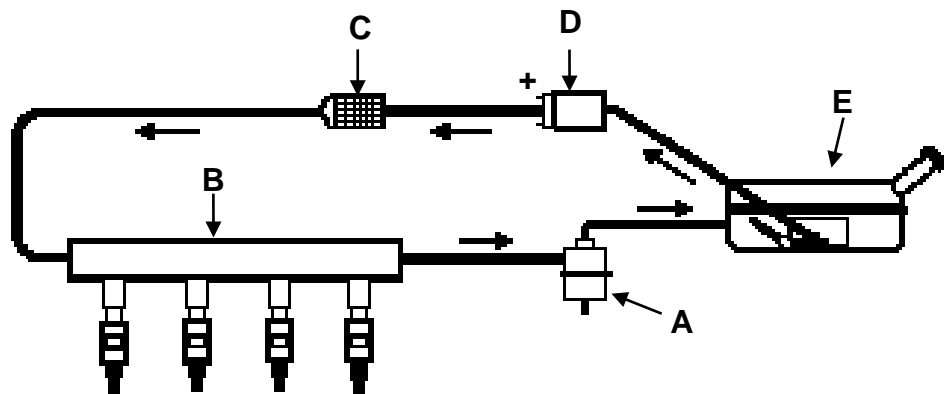
Q21 What is the main purpose of a throttle position sensor?

Q22 Describe why a fuel pressure regulator is necessary in an EFI system.

Q23 (a) What type of fuel pump is used with EFI systems?

(b) Where is it normally fitted?

Q24 Identify the components listed A-E.



A:

B:

C:

D:

E:

REVIEW QUESTIONS THREE

Q25 Name four sensors that send signals to the ECU unit.

Q26 What is the purpose of the camshaft position sensor?

Q27 Identify the component shown and outline its main function.

Component:

Function:



Q28 What is the purpose of the exhaust gas oxygen sensor?

Q29 What must be carried out before disconnecting a fuel line from an EFI system?

Q30 What precautions should be observed to prevent petrol fumes from entering the catalytic converter?

Q31 Complete the following statements.

The _____ sensor is commonly located within the inlet
or in the air cleaner _____ box. The sensor consists of an external
_____ connection to the _____ and a brass sensing
_____ that is inserted into the inlet manifold. The
contains a _____ that is similar in ohm and voltage values to the
_____ sensor.