

## 2015 HIGHER SCHOOL CERTIFICATE EXAMINATION

**Automotive  
Mechanical Technology****Section II****35 marks****Attempt Questions 16–21****Allow about 50 minutes for this section**

Answer the questions in the spaces provided. These spaces provide guidance for the expected length of response.

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**Question 16 (4 marks)**

Ten litres of engine oil have been spilled on the workshop floor.

**4**

Outline how to clean up and dispose of the waste.

If a spill of liquid occurs in a workshop the shop may have spill kits ready on hand to soak ~~up~~ up the liquids clean and effectively but they might also have a drain/catchment system so that any spilt liquids can be collected and then stored in a clean and separated area away from local water systems ready to be collected or ~~recycled~~ recycled.

**Question 17** (4 marks)

- (a) Where should a workshop dispose of trade waste water? 1

In an unobscured area away from other water sources to minimise contamination.

- (b) Outline TWO environmental consequences of incorrect trade waste disposal. 3

One consequence of <sup>incorrect</sup> waste disposal is a heavy fine from the EPA (Environmental Protection Agency) in the ranges of \$100,000.

~~The~~ Another consequence can be jail time for contaminating the local water supply.

## 2015 HIGHER SCHOOL CERTIFICATE EXAMINATION

**Automotive  
Mechanical Technology****Section II (continued)****Question 18** (3 marks)

All new vehicles registered in Australia need to be compliant with Australian Design Rules (ADR).

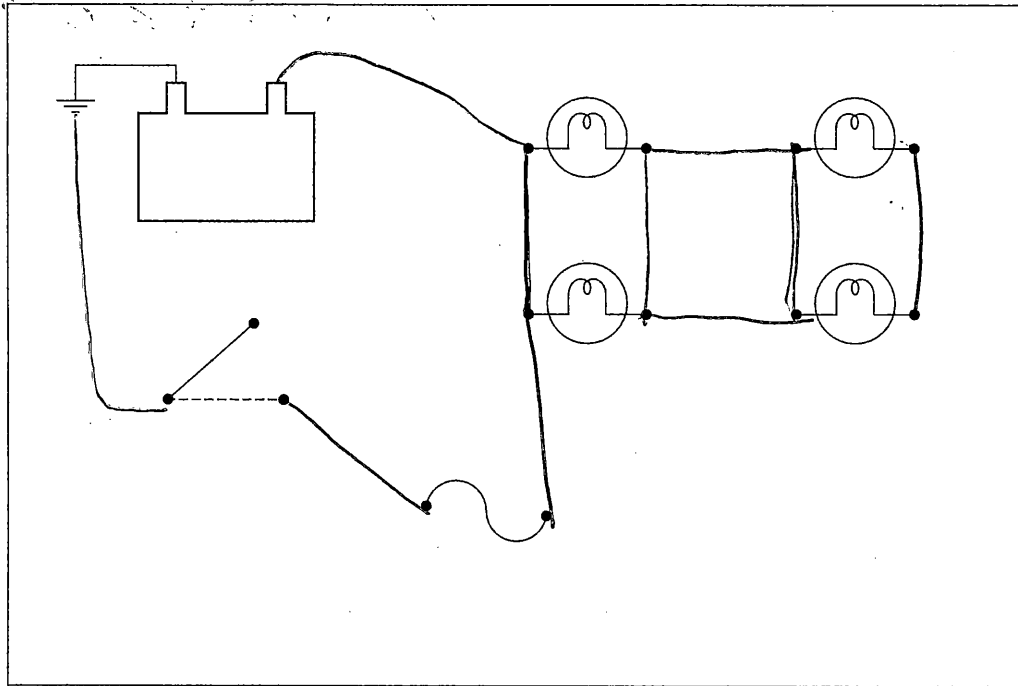
**3**

What is the purpose of these rules?

All new vehicles need to comply with the ADR to assure the consumer that the vehicle is safe and capable of driving. Also ~~to~~ ~~not~~ assure ~~not~~ false advertisement which will result in big fines for the company and to be sure that everyone has the same Fair Rules

**Question 19** (7 marks)

- (a) Construct a parking light circuit in the box below, using all the symbols provided. 5



- (b) Explain how you would use a voltmeter to test voltage drop to the parking/tail light circuit. 2

You would place the volt meter just after the globes and this would give you the reading of the voltage drop when starting the car.



## 2015 HIGHER SCHOOL CERTIFICATE EXAMINATION

Automotive  
Mechanical Technology

## Section II (continued)

## Question 20 (8 marks)

- (a) Describe how the motor sport industry has influenced the development of vehicle brake technologies. 3

The motor sport industry has all ways effected the brake development in cars and new ways to improve them, they have effected them ~~by~~ by going fast then needing to slow the racecar down quickly and effectively to get around the corner as smooth as possible without crashing. thats why car manufactures are always locking to upgrade car brakes to reduce crash and braking effectively.

- (b) Explain how an anti-lock braking system (ABS) prevents wheel lock-up in emergency braking conditions. 5

ABS prevents brake Lockup by ~~not~~ not applying to much force on the brake callipers when braking, but still uses enough force to slow or stop the vehicle to prevent a crash. If to much force is applied the brake callipers will be pushed to hard up againsted the wheel and the brake pads will wear out real fast and Lockup the wheel possibly causing a crash unlike ABS.

## 2015 HIGHER SCHOOL CERTIFICATE EXAMINATION

**Automotive  
Mechanical Technology****Section II (continued)****Question 21 (9 marks)**

- (a) Why should a workshop vice be left with a gap between the jaws when it is not in use? 1

Helps with the swelling and contraction of the metal in the vice.

- (b) Under what circumstances should the drilling speed be changed on a pedestal drill? 2

When drilling thicker metal.  
To minimise wear on drill bits.  
Minimise friction.

- (c) What precautions should be observed when using an electric welder in the workplace? 2

Make sure power supply is safe  
ie cord not frayed. Make sure  
the power switch works.

Question 21 continues on page 16

## Question 21 (continued)

- (d) Describe the advantages of using electric-powered tools compared with air-powered tools.

4

Electric power tools don't have to be serviced.  
Electric power tools don't need an air compressor for use so they are more portable.  
Electric power tools can be cordless allowing greater portability.  
Electric power tools can be used in more work spaces, where ever there is power.

End of Question 21