

# **2014 HSC Industrial Technology Automotive Technologies Marking Guidelines**

## **Section I**

### **Multiple-choice Answer Key**

<b>Question</b>	<b>Answer</b>
1	B
2	C
3	D
4	A
5	B
6	B
7	C
8	A
9	C
10	C

## Section II

### Question 11

Criteria	Marks
<ul style="list-style-type: none"> <li>Correctly identifies a device</li> </ul>	1

*Sample answer:*

Fuel filter

### Question 12

Criteria	Marks
<ul style="list-style-type: none"> <li>Provides the cause and effect of a MAP sensor</li> </ul> AND	3
<ul style="list-style-type: none"> <li>Indicates its performance in an engine</li> </ul>	
<ul style="list-style-type: none"> <li>Provides characteristics of the function of a MAP sensor on an engine</li> </ul>	2
<ul style="list-style-type: none"> <li>Provides some relevant information</li> </ul>	1

*Sample answer:*

- Provides instantaneous manifold pressure information to the engine's electronic control unit (ECU). This data is used to determine how much fuel to deliver to the engine based on the load applied.
- Information from the MAP sensor influences the advance or retard of the ignition system.

### Question 13

Criteria	Marks
<ul style="list-style-type: none"> <li>Provides a detailed understanding of differential gears in a rear-wheel drive vehicle</li> </ul>	3
<ul style="list-style-type: none"> <li>Provides characteristics of differential gears in a rear-wheel drive vehicle</li> </ul>	2
<ul style="list-style-type: none"> <li>Provides some relevant information</li> </ul>	1

*Sample answer:*

A differential couples the drive shaft to the half shafts of a rear-wheel drive vehicle. The differential gears allow the wheels to rotate at different speeds when turning. The outer wheel is able to rotate faster than the inner wheel when turning.

**Question 14**

Criteria	Marks
• Sketches in general terms the function of piston rings	3
• Indicates the main features of piston rings	2
• Provides some relevant information	1

**Answers could include:**

- Sealing the combustion chamber so gases from the chamber cannot escape into the crank
- Regulating engine oil combustion
- Supporting heat transfer from the piston to the cylinder wall

**Question 15**

Criteria	Marks
• Provides a detailed explanation of the effect of incorporated devices on safety improvement • Provides a relevant example	5
• Provides a sound explanation of the effect of incorporated devices on safety improvement • Provides examples	3–4
• Attempts to explain the effect of incorporated safety devices	1–2

**Sample answer:**

Brakes — improved materials and manufacturing techniques in brake construction and rotors improved brake consistency.

Airbags — using airbags in various locations in the vehicle has improved occupant safety.

Radar sensing — some cars have radar which maintains safe vehicle distances while driving and will slow vehicles or stop them when needed.

## Section III

### Question 16 (a)

Criteria	Marks
• Detailed understanding of the characteristics and features of how government legislation has impacted work practices	6
• Sound understanding of the characteristics and features of how government legislation has impacted work practices	4–5
• Basic understanding of features of government legislation and link to work practices	2–3
• Provides some relevant information	1

#### *Sample answer:*

Government legislation, such as the Equal Employment Opportunity Act, has had significant impacts on work practices. For example, when advertising, interviewing, and appointing someone to a position in an organisation care and diligence is required to ensure everybody has an opportunity to apply, get interviewed and appointed, regardless of gender, disability, race, beliefs etc. This may mean equal access now requires ramps, elevators, disabled toilets in all workplaces.

### Question 16 (b)

Criteria	Marks
• Provides a judgement based on detailed criteria of the effect of new and emerging technologies on work practices	9
• Provides a judgement based on criteria of the effect of new and emerging techniques on work practices	7–8
• Provides an understanding of the value and effect of new and emerging technologies on work practices	5–6
• Main features of the value or effect of new and emerging technologies on work practices	3–4
• Provides some relevant information	1–2

#### *Answers could include:*

The internet has now allowed people to do some of their work from home as they can access the company's software and data from home.

This is very positive for three main reasons:

1. Travel time is reduced. This means the worker can spend more time with his/her family which has positive effects for the happiness of the worker.
2. Fewer people travelling on roads to and from work means less traffic. Less traffic means faster travelling and less frustration before getting to work.
3. More work can be done as working alone at home means no distractions from other workers.

# Industrial Technology Automotive Technologies

## 2014 HSC Examination Mapping Grid

**Section I**

Question	Marks	Content	Syllabus outcomes
1	1	Tools and equipment	H1.2, H2.1, H4.3
2	1	Wheels and tyres	H1.2, H2.1, H4.3
3	1	Tools and equipment	H1.2, H2.1, H4.3
4	1	Drive line systems	H1.2, H2.1, H4.3
5	1	Fuel systems	H1.2, H2.1, H4.3
6	1	Engine types, fuels and lubricants	H1.2, H2.1, H4.3
7	1	Ignition systems	H1.2, H2.1, H4.3
8	1	Tools and equipment	H3.2
9	1	Engine types	H1.2, H2.1, H4.3
10	1	Personnel	H3.2

**Section II**

Question	Marks	Content	Syllabus outcomes
11	1	Fuel systems	H1.2, H2.1, H4.3
12	3	Engine management systems	H1.2, H2.1, H4.3
13	3	Drive line systems	H1.2, H2.1, H4.3
14	3	Engine and engine related systems	H1.2, H2.1, H4.3
15	5	Automotive design	H1.2, H2.1, H4.3

**Section III**

Question	Marks	Content	Syllabus outcomes
16 (a)	6	Personnel issues	H1.1, H2.1
16 (b)	9	Technological considerations	H1.1, H2.2, H7.2