

2017 HSC Automotive Vehicle Body Marking Guidelines

Section I

Multiple-choice Answer Key

| Question | Answer |
|-----------------|---------------|
| 1 | D |
| 2 | C |
| 3 | A |
| 4 | A |
| 5 | B |
| 6 | B |
| 7 | C |
| 8 | B |
| 9 | B |
| 10 | B |
| 11 | A |
| 12 | D |
| 13 | C |
| 14 | B |
| 15 | D |

Section II

Question 16 (a)

| Criteria | Marks |
|--|-------|
| • Correctly identifies TWO areas of use for the fastener | 2 |
| • States one area of the fastener | 1 |

Sample answer:

The fastener would typically be used in engine bays or in the interior.

Answers could include:

- under carriage
- to hold lightweight parts/trim to a vehicle body

Question 16 (b)

| Criteria | Marks |
|--|-------|
| • Describes a range of advantages and disadvantages of using the fastener. Uses industry terminology | 4 |
| • Identifies some advantages and/or disadvantages of using the fastener • Uses limited industry terminology | 2–3 |
| • Identifies one advantage or disadvantage of using the fastener | 1 |

Sample answer:

An advantage of scriveners is that they are available in a range of sizes and can easily be removed and replaced. They are lightweight, neat and reusable. The disadvantages are that they can be fragile and break or strip. Furthermore, they are heat sensitive.

Question 17 (a)

| Criteria | Marks |
|---|-------|
| • Outlines a method for checking for leaks in an oxyacetylene set | 2 |
| • Identifies a method for checking for leaks | 1 |

Sample answer:

Prior to operating the gas bottle a visual inspection of all hoses, regulators and torch is made.

After opening bottles, a check is made by listening and feeling. A visual check is made of all hoses and fittings.

Question 17 (b)

| Criteria | Marks |
|---|-------|
| • Explains all PPE that is worn and gives reasons for its use | 3 |
| • Lists some PPE and/or gives reasons for its use | 2 |
| • Identifies PPE | 1 |

Sample answer:

The operator will wear leather apron and gauntlets, long pants and leather shoes to prevent the risk injury to hands, body and feet.

Correct oxyacetylene goggles are used to shield their eyes from spark and radiation hazards.

Question 17 (c)

| Criteria | Marks |
|--|-------|
| • Provides characteristics and features of processes for setting up a vehicle to be welded • Uses industry-specific terminology | 4 |
| • Outlines processes and/or precautions for setting up a vehicle to be welded • Uses some industry terminology | 2–3 |
| • States ONE basic process and/or precaution | 1 |

Sample answer:

Processes in dealing with hazards associated with welding would include ventilating the work area. This area should be free of trip and slip hazards. All flammable liquids should be removed and isolated. Appropriate shielding methods should be installed to prevent flash injuries to persons not involved in the repair. Correct PPE should be worn by the operator, including eye and body protection. The vehicle should have all electrical components disconnected or isolated to prevent damage.

Answers could include:

- check and remove interior behind area to be welded
- remove trim panels from area to be welded
- ensure a fire extinguisher is placed close to work area
- ensure safe positioning of leads running through work area
- encourage operator to work at a height to prevent injury to back.

Question 18 (a)

| Criteria | Marks |
|---|-------|
| • Identifies TWO materials that are applied to a vehicle body to reduce vibration and noise | 2 |
| • Identifies ONE material that is applied to a vehicle body | 1 |

Sample answer:

- seam sealer is applied to vehicle body joints to ensure dust and water do not enter the vehicle
- sound deadening or insulation is applied inside panels to reduce cabin noise
- tar/bitumen is applied to the undercarriage.

Question 18 (b)

| Criteria | Marks |
|---|-------|
| • Describes a range of differences between chassis types • Uses correct industry terminology | 3 |
| • Outlines differences between chassis types • Uses some industry terminology | 2 |
| • Identifies a difference between the chassis types • Uses limited industry terminology | 1 |

Sample answer:

A monocoque vehicle has structural integrity built into the body sills, pillars and roof. Driveline bolts directly to the vehicle body and subframes.

A full-chassis vehicle has a metal spine that provides all components, including the body, rely upon a strong structural integrity.

Question 19 (a)

| Criteria | Marks |
|--|-------|
| • Identifies THREE hazards of using compressed air | 3 |
| • Identifies TWO hazards of using compressed air | 2 |
| • Identifies ONE hazard of using compressed air | 1 |

Sample answer:

The hazards are:

- compressed air entering the body can cause a heart attack
- when used to test leakage mechanical failure could cause injury
- risk of blowing dangerous substances such as petrol or solvents onto eyes or skin.

Question 19 (b)

| Criteria | Marks |
|--|-------|
| <ul style="list-style-type: none"> Provides a comprehensive safety maintenance schedule which could include weekly, monthly and yearly schedules using correct industry terminology | 5 |
| <ul style="list-style-type: none"> Provides a safety maintenance schedule listing some items to be conducted at different intervals using some industry terminology | 3–4 |
| <ul style="list-style-type: none"> Provides a basic maintenance schedule listing different item/s to be conducted at different intervals using basic industry terminology | 2 |
| <ul style="list-style-type: none"> Provides general information on maintenance schedules | 1 |

Sample answer:

Maintenance schedule:

- annual pressure vessel test
- six-month interval test and tag
- monthly inspection of belt drive
- weekly test safety valve
- weekly oil lubricate
- daily drain water accumulated.

Question 20 (a)

| Criteria | Marks |
|--|-------|
| <ul style="list-style-type: none"> Outlines steps that could be used when working on or around airbag system wiring to improve safety | 2 |
| <ul style="list-style-type: none"> Outlines a basic step that could be used when working on or around airbag system wiring | 1 |

Sample answer:

Follow manufacturer’s procedures when removing plugs in wiring and locations of wiring. Ensure the wiring/system has been disabled according to manufacturing instructions.

Question 20 (b)

| Criteria | Marks |
|---|-------|
| <ul style="list-style-type: none"> Provides a clear description of why it is important to visually inspect airbag wiring | 2 |
| <ul style="list-style-type: none"> Provides a basic description of why it is important to visually inspect airbag wiring | 1 |

Sample answer:

To ensure no damage to the airbag wiring has been missed, causing a fault or accidental deployment of an airbag.

Question 20 (c)

| Criteria | Marks |
|--|--------------|
| • Lists a range of basic tests or procedures | 3 |
| • Lists basic tests or procedures | 2 |
| • Lists a basic test or procedure | 1 |

Sample answer:

Check charge rate.

Check all connections are tight/plugged in.

Check fuses.

Scan tool to identify the area.

Section III

Question 21 (a)

| Criteria | Marks |
|---|-------|
| <ul style="list-style-type: none"> Clearly identifies a range of benefits of using original manufacturer's parts Uses industry-specific terminology | 3 |
| <ul style="list-style-type: none"> Identifies some benefits of using original manufacturer's parts Limited industry terminology used | 2 |
| <ul style="list-style-type: none"> States ONE benefit of using original manufacturer's parts | 1 |

Sample answer:

An original manufacturer's part is made to the same strict quality control measures as the original panel. This ensures better fit, alignment and integrity and its use should not affect the manufacturer's warranty on the vehicle.

Aftermarket panels are often an inferior quality and/or fit and may require extra work and time to be made good.

Question 21 (b)

| Criteria | Marks |
|---|-------|
| <ul style="list-style-type: none"> Describes a clear set of processes, procedures and reasons to trial fit a panel Uses industry-specific terminology | 4 |
| <ul style="list-style-type: none"> Outlines suitable processes and reasons for trial fitting a panel Uses some industry terminology | 3 |
| <ul style="list-style-type: none"> Outlines a basic procedure to trial fit a panel Uses limited industry terminology | 1–2 |

Sample answer:

A new panel is trial fitted prior to refinishing to ensure correct mounting points, correct alignment to adjacent panels, retention of correct body gaps. This allows for correction or reworking if needed.

The panel is trial fitted using correct hardware and tensioned into place. All locks, hinges, handles, mirrors, glass headlights, bumpers etc are also trial fitted to ensure correct fit and also to save time during final assembly.

Question 21 (c)

| Criteria | Marks |
|---|-------|
| <ul style="list-style-type: none"> • Provides a sequential and comprehensive description of the processes involved in taking a new panel from the manufacturer’s primer to a painted panel fitted to a vehicle • Uses industry-specific terminology | 8 |
| <ul style="list-style-type: none"> • Provides a mostly sequential description of processes involved in taking a new panel from the manufacturer’s primer to a painted panel fitted to a vehicle • Uses industry terminology | 6–7 |
| <ul style="list-style-type: none"> • Outlines processes and/or sequences of taking a new panel from manufacturer’s primer to a painted panel • Uses some industry terminology | 4–5 |
| <ul style="list-style-type: none"> • Outlines a basic procedure to take a new panel from manufacturer’s primer to a painted panel OR finishing a panel • Limited industry terminology | 2–3 |
| <ul style="list-style-type: none"> • Provides general information on preparing, painting or finishing | 1 |

Answers could include:

A original manufacturer’s panel will arrive in a manufacturer’s primer and once trial fitted will be block sanded and inspected for damage from transport.

- any repairs are made and the panel coated in a primer. The primer will be once again be block sanded
- once inspected a coat of epoxy primer is applied and sanded/rubbed to a smooth finish
- colour is matched to the vehicle’s paint code and manufacturer’s specifications
- colour is applied on hard to access areas
- panel is refitted to the vehicle and any final sanding is done to the panel and adjacent panels to allow panels to be blended
- colour is sprayed onto the panel and after blended onto adjacent panels. Depending on manufacturer’s specifications, a clear coat may be required
- after paint is cured it is wet sanded to remove slight defects and orange peel then buffed with a machine polisher to give the vehicle an even shine.

Section IV

Question 22

| Criteria | Marks |
|--|-------|
| <ul style="list-style-type: none"> Provides a comprehensive discussion of a range of implications for industry and society in relation to the introduction of self-driving vehicles Uses precise industry-specific terminology and relevant workplace examples Provides a logical and cohesive response | 13–15 |
| <ul style="list-style-type: none"> Provides a detailed discussion of the implications for industry and society in relation to the introduction of self-driving vehicles Uses sound industry-specific terminology and/or relevant workplace examples Provides a logical and/or cohesive response | 10–12 |
| <ul style="list-style-type: none"> Provides a discussion on some of the implications for industry and/or society in relation to the introduction of self-driving vehicles Uses industry terminology and/or examples Provides a descriptive response | 7–9 |
| <ul style="list-style-type: none"> Provides a basic description of the implications for industry and/or society in relation to the introduction of self-driving vehicles Uses some industry terminology or examples | 4–6 |
| <ul style="list-style-type: none"> Provides general information relating to the introduction of self-driving vehicles Uses general terms | 1–3 |

Answers could include:

The social and industrial implications for the introduction of self-driving cars are significant.

The motor repair industry will need significant changes to be able to repair this new type of vehicle. The systems which enable a vehicle to be self driven will be controlled by computers and electrically driven. For example, controlling steering can only be achieved electronically. Hydraulic steering will no longer be used as this is more difficult to control by computer. Most workshop mechanics have been trained in hydraulic power steering and therefore will need specific training in electrical controlled systems which also will use dangerous voltages.

The braking system will also need to be associated with the control of the vehicle to activate smoothly under normal driving situations. This will also involve a level of electrical computer control to enable this type of operation. For a mechanic this will require a higher level of training and equipment.

Industry advantages

- more specialised technicians earning more money
- possibly similar drive/braking systems will allow more room to access electric control systems

Industry disadvantages

- the need for tradespeople to be retrained

- the need for significant investment in diagnostic equipment
- shorter servicing intervals for electric vehicles
- fewer service workshops/tradespeople as the national fleet will require fewer repairs.

Social implications

The introduction of driverless cars has many social implications. The first consideration will be how to program a vehicle to self-preserve or preserve those around the vehicle. For example, if a mother and baby in a stroller were to cross into the path of a driverless car.

Other social implications are very positive when the aged or disabled are considered. Currently many people cannot hold a drivers licence for medical reasons and have lost their independence. Self-driving vehicles will allow these people (aged, blind, epileptic, etc) to have the same level of independence as those with a licence.

The use of self-driving vehicles will also mean that fewer parking spaces will be necessary at high density sites such as shopping centres. The self-driving car will drop the passengers at a location and drive to park at any location.

2017 HSC Automotive Vehicle Body Mapping Grid

Section I

| Question | Marks | HSC content – focus area | Employability skills (Please put an X where appropriate) | | | | | | |
|----------|-------|---|---|----------|-----------------|---------------------------|-------------------------|-----------------|----------|
| | | | Communication | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning |
| 1 | 1 | (Mandatory) – Safety – Apply safe working practices in an automotive workplace – page 30 | | | | | X | | |
| 2 | 1 | (Stream) – Vehicle body – Use and maintain workplace tools and equipment – pages 67–68 | | | | | | | X |
| 3 | 1 | (Mandatory) – Working in the automotive industry and workplace – Communicate effectively in an automotive workplace – page 48 | X | | | | X | | |
| 4 | 1 | (Mandatory) – Sustainability – Apply environmental and sustainability best practice in an automotive workplace – page 35 | | | | | X | X | |
| 5 | 1 | (Mandatory) – Sustainability – Apply environmental and sustainability best practice in an automotive workplace – page 35 | | | | | | | X |
| 6 | 1 | (Stream) – Vehicle body – Apply automotive electrical system fundamentals – page 65 | | | | | | X | X |
| 7 | 1 | (Stream) – Vehicle body – Use and maintain workplace tools and equipment – pages 67–68 | | | X | | | X | |
| 8 | 1 | (Mandatory) – Working in the automotive industry and workplace – Communicate effectively in an automotive workplace – page 48 | X | | | | | | |
| 9 | 1 | (Stream) – Vehicle body – Prepare vehicle components for paint repairs – page 71 | | | X | | | | X |
| 10 | 1 | (Stream) – Vehicle body – Use and maintain workplace tools and equipment – pages 67–68 | | | | | | | X |
| 11 | 1 | (Stream) – Vehicle body – Carry out pre-repair body operations – page 68 | X | | | | | | X |

| Question | Marks | HSC content – focus area | Employability skills (Please put an X where appropriate) | | | | | | | |
|----------|-------|--|---|----------|-----------------|---------------------------|-------------------------|-----------------|----------|------------|
| | | | Communication | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 12 | 1 | (Stream) – Vehicle body – Use and maintain workplace tools and equipment – pages 67–68 | | | X | | | | | X |
| 13 | 1 | (Stream) – Vehicle body – Carry out pre-repair body operations – page 68 | | | X | | | | X | X |
| 14 | 1 | (Stream) – Vehicle body – Carry out pre-repair body operations – page 68 | | | X | | | | | |
| 15 | 1 | (Stream) – Vehicle body – Carry out pre-repair body operations – page 69 | | | X | | | | | X |

Section II

| Question | Marks | HSC content – focus area | Employability skills (Please put an X where appropriate) | | | | | | | |
|----------|-------|--|---|----------|-----------------|---------------------------|-------------------------|-----------------|----------|------------|
| | | | Communication | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 16 (a) | 2 | (Stream) – Vehicle body – Carry out pre-repair body operations – page 69 | X | | | | | | | X |
| 16 (b) | 4 | (Stream) – Vehicle body – Carry out pre-repair body operations – page 69 | | | | | | | X | |
| 17 (a) | 2 | (Stream) – Vehicle body – Use and maintain workplace tools and equipment – pages 67–68 | | | X | X | | | X | |
| 17 (b) | 3 | (Stream) – Vehicle body – Use and maintain workplace tools and equipment – pages 67–68 | | | X | | | | | X |
| 17 (c) | 4 | (Stream) – Vehicle body – Use and maintain workplace tools and equipment – pages 67–68 | | X | | | X | X | | |
| 18 (a) | 2 | (Stream) – Vehicle body – Carry out pre-repair body operations – page 68 | | | | | | | X | X |
| 18 (b) | 3 | (Stream) – Vehicle body – Carry out pre-repair body operations – page 69 | | | | | | | X | X |
| 19 (a) | 3 | (Mandatory) – Safety – Apply safe working practices in an automotive workplace – pages 30–31 | | X | X | X | | X | | |

| Question | Marks | HSC content – focus area | Employability skills (Please put an X where appropriate) | | | | | | | |
|----------|-------|--|---|----------|-----------------|---------------------------|-------------------------|-----------------|----------|------------|
| | | | Communication | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 19 (b) | 5 | (Mandatory) – Safety – Apply safe working practices in an automotive workplace – pages 30–31 | X | | X | | X | X | | |
| 20 (a) | 2 | (Mandatory) – Troubleshooting and problem solving – identify basic automotive faults using troubleshooting processes – pages 39–40 | | | X | X | | X | | X |
| 20 (b) | 2 | (Mandatory) – Troubleshooting and problem solving – identify basic automotive faults using troubleshooting processes – pages 39–40 | | | X | | | X | | X |
| 20 (c) | 3 | (Mandatory) – Troubleshooting and problem solving – identify basic automotive faults using troubleshooting processes – pages 39–40 | X | | X | | X | | X | X |

Section III

| Question | Marks | HSC content – focus area | Employability skills (Please put an X where appropriate) | | | | | | | |
|----------|-------|--|---|----------|-----------------|---------------------------|-------------------------|-----------------|----------|------------|
| | | | Communication | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 21 (a) | 3 | (Stream) – Vehicle body – Prepare vehicle components for paint repairs – page 70 | | | | | | | X | X |
| 21 (b) | 4 | (Stream) – Vehicle body – Prepare vehicle components for paint repairs – page 70 | | | X | X | X | | | |
| 21 (c) | 8 | (Stream) – Vehicle body – Prepare vehicle components for paint repairs – page 70 | | | X | X | X | X | | |

Section IV

| Question | Marks | HSC content – focus area | Employability skills (Please put an X where appropriate) | | | | | | | |
|----------|-------|---|---|----------|-----------------|---------------------------|-------------------------|-----------------|----------|------------|
| | | | Communication | Teamwork | Problem-solving | Initiative and enterprise | Planning and organising | Self-management | Learning | Technology |
| 22 | 15 | (Mandatory) – Working in the automotive industry and workplace – Communicate effectively in an automotive workplace – page 47 | X | X | | X | | X | X | X |