BOSTES | BOARD OF STUDIES TEACHING & EDUCATIONAL STANDARDS NSW

2015 HSC Automotive Vehicle Body Marking Guidelines

Section I

Multiple-choice Answer Key

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

Section II

Question 16

Criteria	Marks
• Correctly outlines how to clean up the oil using an industry accepted method • Identifies best-practice for disposing of the waste as per EPA guidelines • Uses precise industry-specific terminology	4
• Outlines an acceptable method to clean up the oil • Identifies a method of disposal • Uses industry terminology	2–3
• Outlines an acceptable method to either clean up the oil or dispose of the waste • Uses general terms	1

Sample answer:

- Stop the source of the spill
- With absorbent material (DRI-SORB), from spill kit, build a bund to encircle the spill and stop the spread
- Slowly broom absorbent material inwards until spill is covered
- Shovel into plastic bag and place in spill kit bin
- Use bucket and mop to clean remainder.

Question 17 (a)

Criteria	Marks
• Correctly identifies where trade waste water should be disposed of	1

Sample answer:

- Into a drain connected to water/oil separator.

Answers could include:

- Water to sewer, oil to pick up/recycle.

Question 17 (b)

Criteria	Marks
• Outlines TWO environmental consequences relating to incorrect trade waste disposal • Demonstrates cause and effect between the incorrect disposal of trade waste and the associated damage to the environment • Uses industry-specific examples	3
• Outlines at least ONE environmental consequence relating to incorrect trade waste disposal • Uses examples related to the industry	2
• Outlines an environmental consequence relating to incorrect trade waste disposal • Uses general terms	1

Sample answer:

Incorrect trade waste water disposal can lead to several major environmental consequences. If trade water is disposed of into storm water, the pollutants can cause problems to flora and fauna through polluting/contaminating local creek/river systems as well as the ocean. Furthermore, this can lead to soil contamination, which can cause problems for many years to come.

Answers could include:

- Fire danger
- Damage to environment due to storm water contamination of creeks and ocean
- Soil contamination
- Loss of value of recyclable materials
- Danger to personnel due to dust, vapour and odour.

Question 18

Criteria	Marks
• Demonstrates a clear understanding of the purpose of Australian Design Rules (ADR) • Provides industry-specific examples to support the response • Uses industry terminology	3
• Demonstrates some understanding of the purpose of Australian Design Rules (ADR) • Provides examples to support the response	2
• Demonstrates a basic understanding of the purpose of Australian Design Rules (ADR)	1

Sample answer:

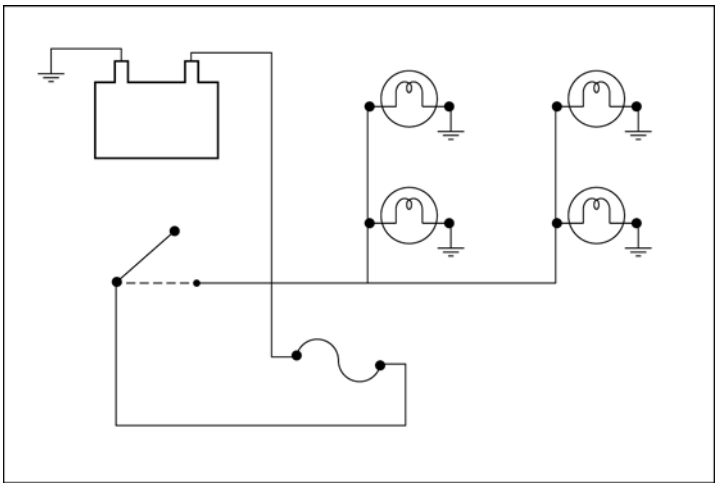
- ADR was implemented to ensure manufacturers comply with specific rules when manufacturing to improve vehicle safety and reliability. Aspects improved include:
  - Crash protection for driver/passenger
  - Restraint systems for child seats
  - Systems to reduce the threat of theft
  - Systems to reduce the threat of collision
  - Systems to reduce the threat of exhaust emissions
  - Systems to reduce the threat of operating noise.

Question 19 (a)

Criteria	Marks
• The circuit has been connected correctly • Earth symbol has been identified	5
• The circuit has been connected to form a complete circuit • The lamp connection may be in series	4
• The wiring has been connected to all components • The circuit is not functional	3
• The majority of components have been connected • The circuit is not functional	2
• An attempt has been made to connect components	1

Sample answer:

5 Marks



Question 19 (b)

Criteria	Marks
• Clearly explains how to determine voltage drop using a voltmeter	2
• Provides a general answer	1

Sample answer:

Measuring battery voltage and comparing readings to voltage supply to the light/load.

Connecting a voltmeter across two points of the circuit to test voltage drop.

Question 20 (a)

Criteria	Marks
• Clearly explains the reasons why it is considered best practice to replace rather than repair a door • Uses industry-specific examples • Uses industry terminology	3
• Explains some valid reasons why it is considered best practice to replace rather than repair a door • Uses industry terminology	2
• Explains a reason why it is considered best practice to replace rather than repair a door • Uses general terms	1

Sample answer:

Time to repair outstrips cost of replacement. Finished product may not meet standard of new part. Alignment problems due to unseen damage to hinge moving. A repaired door may not have the correct lines due to repair. A new door will have no body filler, which could compromise the door if not applied correctly.

Question 20 (b)

Criteria	Marks
• Prepares a logical action plan for the removal of the door • Identifies the need to disassemble components in sequence • Correctly identifies various door components • Uses industry-specific terms	4–5
• Prepares an action plan for the removal of the door • Correctly identifies some door components • Uses industry terms	2–3
• Prepares some steps for the removal of the door • Uses general terms	1

Sample answer:

Record & photograph all door components and window winder mech. Note any trim or hardwear damage so parts can be ordered. Tag and store.

- Document/photograph door, inside and out.
- Storage containers and labels.
- Remove all door trim.
- Disconnect electric connectors in door in door gap.
- Remove all central locking, door locks, mirror.
- Remove all window motor/winder mechanisms and door glass.
- Removal all door rubber/seals.
- Support or unpin hinge.
- Remove door from car.

Question 21 (a)

Criteria	Marks
• Correctly identifies why a vice should be left with an air gap between the jaws when not in use	1

Sample answer:

The vice will contract as it cools. If the jaws are clamped shut it puts a large strain on the vice which may crack it.

Question 21 (b)

Criteria	Marks
• Correctly identifies the circumstances when the RPM should be changed on a pedestal drill	2
• Identifies a circumstance when the RPM should be changed on a pedestal drill	1

Sample answer:

Larger drill sizes need to spin slower than smaller drill sizes. When different materials are used, different speeds are necessary.

Question 21 (c)

Criteria	Marks
• Correctly identifies the precautions that should be observed when using an electric welder in the workplace	2
• Identifies a precaution that should be observed when using an electric welder in the workplace	1

Sample answer:

Precautions are correct PPE, ARC blinds, disconnect electronic devices such as computers, shield from heat and wet areas. Keep away from flammable materials and liquids.

Question 21 (d)

Criteria	Marks
• Develops a clear description of the advantages of using electric powered tools compared with air powered tools • Uses industry-specific terms • Provides industry-specific examples	4
• Develops a general description of the advantages of using electric powered tools compared to air powered tools • Uses industry-specific terms	2–3
• Develops a basic description of the advantages of using electric powered tools compared to air powered tools • Uses general terms	1

Sample answer:

Certain tools are only available as electric powered. Electric tools do not rely on a compressor, air lines and fittings. They are less noisy and do not require oiling and draining of moisture. Electric tools, if battery powered, are lighter and easier to handle, they are portable, quieter and have a minimal risk of electric shock.

Disadvantages are that they can go flat and need recharging – they need time to charge. Trip hazards with cord power tools, and cord damage. Can't be used in a power blackout or wet areas.

Section III

Question 22 (a)

Criteria	Marks
• Clearly identifies logical steps to take before disassembling a car for restoration • Demonstrates a clear understanding of the issues associated with preparing a car for disassembly	3
• Identifies steps to take before disassembling a car for restoration • Demonstrates an understanding of the issues associated with preparing a car for disassembly	2
• Identifies a suitable step to take before disassembling a car for restoration • Demonstrates a limited understanding of the issues associated with preparing a car for disassembly	1

Sample answer:

Preparation is important prior to starting a restoration ensuring all areas of the vehicle are photographed and documented. Storage areas and bins are to be used with easy identification. Research of available factory and aftermarket components and materials. Deconstruction that may be unique or problematic.

Question 22 (b)

Criteria	Marks
• Demonstrates a clear understanding of the difficulties associated with working on classic cars as opposed to modern vehicles • Identifies several key examples to support their answer • Uses precise industry-specific terminology	4
• Demonstrates an understanding of the difficulties associated with working on classic cars as opposed to modern vehicles • Identifies valid examples to support their answer • Uses industry-specific terminology	3
• Demonstrates a basic understanding of the difficulties associated with working on classic cars as opposed to modern vehicles • Identifies some examples to support their answer • Uses general terms	2
• Demonstrates a limited understanding of the difficulties associated with working on classic cars as opposed to modern vehicles • Identifies an example to support their answer	1

Sample answer:

Working on a classic car presents many different problems. A classic vehicle may have sustained multiple repairs from accident damage, rust or paint repairs which aren't clearly visible.

Prior knowledge of the vehicle make will assist with removal or refitting trim, rubber and panels. Parts for classic cars are often harder to obtain although there is a good aftermarket industry producing reproduction parts for some models. Modern vehicles are often well supported with new or recycled panels, trim, etc.

Question 22 (c)

Criteria	Marks
• Provides a detailed description of ways to finish the rust problem as well as minimise future rust issues • Demonstrates a sound technical understanding of why older vehicles are prone to rust • Provides a logical and cohesive response • Uses precise industry-specific terminology	8
• Provides a sound description of ways to finish the rust problem as well as minimise future rust issues • Demonstrates some technical understanding of why older vehicles are prone to rust • Provides a logical response • Uses appropriate industry-specific terminology	6–7
• Provides a description of ways to finish the rust problem as well as minimise future rust issues • Demonstrates an understanding of why older vehicles are prone to rust • Uses industry terminology	4–5
• Provides a basic description of ways to finish the rust problem as well as minimise future rust issues • Demonstrates a basic understanding of why older vehicles are prone to rust • Uses general terms	2–3
• Makes a relevant point	1

Answers could include:

Classic vehicles often suffer from rust due to factory manufacturing processes, poor drainage, minimal weather seals or lack of anti-rust treatments.

To repair the area correctly all rust must be removed and the area exposed, treated and sealed.

Aftermarket panels can be purchased or a panel manufactured to suit. The panel is trimmed and welded into place, metal finished then body worked to ensure a seamless repair prior to repainting.

New drainage holes may need to be included to improve drainage if, or when, water gets in.

Products should be used, such as rust inhibitors like POR15 within inner metal skins, to minimise the chance of rust re-appearing.

Section IV

Question 23

Criteria	Marks
• Provides a highly detailed description of how the automotive industry is addressing the various challenges • Demonstrates clear links between the challenges faced by the industry and ways the repair industry has adapted to the challenges • Provides a detailed and cohesive response • Use precise industry terminology	13–15
• Provides a sound description of how the automotive industry is addressing the various challenges • Demonstrates links between the challenges faced by the industry and ways the repair industry has adapted to the challenges • Provides a detailed response • Uses sound industry-specific terminology	10–12
• Provides a description of how the automotive industry is addressing the various challenges • Demonstrates some links between the challenges faced by the industry and ways the repair industry has adapted to the challenges • Provides a descriptive response • Uses industry terminology	7–9
• Provides a basic description of how the automotive industry is addressing the various challenges • Demonstrates some relevant points • Uses some industry terminology	4–6
• Provides a limited description of how the automotive industry is addressing the various challenges • Uses general terms	1–3

Answers could include:

- Businesses are having to retrain staff. Multi-skilling is becoming more important.
- Businesses are investing large sums of money in new tools and equipment.
- Businesses are needing to work closely with councils as well as the EPA to help improve their sustainable practice.
- Outsourcing may be used as some repairs are becoming highly specialised.

Technology — Lane departure – adaptive cruise control – blind spot monitor – head-up display – reversing camera – brake assist.

Workplace requires advanced equipment to test. Service requires exact mounting for correct function.

Materials — Alloy components – high strength laminated steel in body structure – carbon fibre – plant-based plastics.

Repair tech — sealants/adhesives/riveting/welding body alignment.

Sustainability — plant-based plastics used in body and trim materials – recyclable materials used in body. Longer periods between service.

2015 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	Technology
1	1	Common – WHS – AURASA2002 – pg30 (legal weight limit)			X		X	X		
2	1	Common – WHS – AURASA2002 – pg30	X				X	X	X	
3	1	Common – Work effectively – AURAMA2001 – pg44							X	
4	1	Common – Solve routine problems AURAEA2004 – pg40						X	X	
5	1	Common – Environment – AURAEA3003 – pg35 (recycle/reuse)			X		X			
6	1	Body – Electrical – AURETR2007 – pg56 (ohm law)			X				X	X
7	1	Body – Tools – AURTTK2002 – pg67 (tools identification)	X						X	X
8	1	Body – Tools – AURTTK2002 – pg67 (purpose & limitation)			X		X		X	
9	1	Body – Prepare surfaces for painting – AURVTN2003 – pg71 (final checks)			X	X	X	X	X	
10	1	Body – Prepare to paint – AURVTP2006 – pg68 (routine maintenance)			X	X	X	X	X	
11	1	Body – Carry out pre-repair – AURVTN2003 – pg68 and pg69 (work required)			X				X	X
12	1	Body – Prepare to paint – AURVTP2006 – pg71 (organisation for task)			X		X	X	X	X
13	1	Body – Prepare to paint – AURVTP2006 – pg70 and pg71 (compliance)			X		X	X	X	
14	1	Body – Tools – AURTTK2002 – pg67 (use in auto workshop selection)			X					X
15	1	Body – Carry out pre-repair – AURVTN2003 – pg69							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	4	Common – Safety – AURAEA2002 – pg30 (risk management)			X		X	X		
17 (a)	1	Common – Environment – AURAEA2002 – pg35 and pg36 (ethical environmental practice)			X		X			
17 (b)	3	Common – Environment – AURAEA2002 – pg35 (consequences to environment)							X	
18	3	Common – Communicate effectively – AURAFA2003 – pg43 and pg45 (interpret & convey workplace info)				X	X	X	X	
19 (a)	5	Common – Body – Electrical – AURETR1003 – pg56 (electrical)			X		X	X	X	X
19 (b)	2	Common – Troubleshoot – AURATA2001 – pg39 (conduct tests)			X		X			
20 (a)	3	Body – Dismantle/Remove components – AURUTN2003 – pg69 (inspecting/assessment)			X		X		XX	
20 (b)	5	Body – Carry out pre-prepare AURVTN2003 – pg69 (work sequencing)			X	X	X	X		X
21 (a)	1	Common – Body – Tools – AURTTK2002 – pg67 (operation of auto tools and equipment)			X					
21 (b)	2	Common – Body – Tools – AURTTK2002 – pg67 (hand tools/power tools)			X		X	X	X	
21 (c)	2	Common – WHS – AURASA2002 – pg30 (tools, equipment, machinery)							X	
21 (d)	4	Common – Body – Tools – AURTTK2002 – pg67 (tools, equipment)				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
22 (a)	3	Body – Pre-repair – AURVTN2003 – pg69 (sequencing & organisation)				X	X	X	X	X
22 (b)	4	Body – Pre-repair – AURVTN2003 – pg69 (remove & dismantle)			X	X	X	X	X	X
22 (c)	8	Body – Pre-repair – AURVTN2003 – pg69, 70 and 71 (work tasks - native & scope)	X		X	X	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
23	15	Common – Communicate in an auto workplace – AURAFA2003 – pg44 and pg47 Common – Sustainability (environmentally sustainable work practices) – pg35 and pg36			X				X	X