



**BOARD OF STUDIES**  
NEW SOUTH WALES

**2009**

**HIGHER SCHOOL CERTIFICATE  
SPECIMEN EXAMINATION**

# Automotive

## General Instructions

- Reading time – 5 minutes
- Working time – 2 hours
- Write using black or blue pen
- Board-approved calculators may be used
- Write your Centre Number and Student Number at the top of pages 9 and 13

**Total marks – 80**

**Section I** Pages 2–5

**15 marks**

- Attempt Questions 1–15
- Allow about 15 minutes for this section

**Section II** Pages 9–15

**35 marks**

- Attempt Questions 16–21
- Allow about 45 minutes for this section

**Section III** Page 17

**30 marks**

- Attempt TWO questions from Questions 22–24
- Allow about 1 hour for this section

## Section I

15 marks

Attempt Questions 1–15

Allow about 15 minutes for this section

Use the multiple-choice answer sheet for Questions 1–15.

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- 1 Why should a higher current value fuse NOT be used to replace a lower current value fuse?
  - (A) The fuse box may melt.
  - (B) Damage may occur to the fuse.
  - (C) Damage may occur to the circuit.
  - (D) Higher current value fuses are more expensive than lower current value fuses.
  
- 2 Which of the following methods is the most suitable for joining two ends of a broken wire?
  - (A) Twist the wires together.
  - (B) Crimp the wires together.
  - (C) Solder the wires together.
  - (D) Use ‘scotch locks’ to join the wires.
  
- 3 What car component may be damaged if a car battery is installed in the reverse polarity?
  - (A) Battery
  - (B) Alternator
  - (C) Reversing light
  - (D) Starter solenoid
  
- 4 What do the letters ‘VIN’ stand for on an automotive body?
  - (A) Vehicle Index Number
  - (B) Vehicle Indicator Number
  - (C) Vehicle Identification Name
  - (D) Vehicle Identification Number

- 5 What does the information on an 'MSDS' relate to?
- (A) Material security
  - (B) Manual tool safety
  - (C) Motor vehicle safety
  - (D) Chemical and material safety
- 6 Which of the following is the most appropriate piece of equipment to use to extinguish a flammable liquid fire?
- (A) Fire hose
  - (B) Foam extinguisher
  - (C) Carbon dioxide extinguisher
  - (D) Carbon monoxide extinguisher
- 7 The brake lights on a vehicle are not working and the fault needs to be diagnosed prior to repair.
- What is the correct procedure to follow?
- (A) Depress brake pedal, turn ignition on, replace globe, check fuse
  - (B) Check fuse, turn ignition on, depress brake pedal, replace globe
  - (C) Replace globe, check fuse, turn ignition on, depress brake pedal
  - (D) Turn ignition on, depress brake pedal, check fuse, replace globe
- 8 Which list correctly summarises the automotive troubleshooting process?
- (A) Repairing, adjusting, welding
  - (B) Inspection, adjusting, repairing
  - (C) Collecting information, testing, inspection
  - (D) Checking, collecting information, servicing

- 9** What does ‘sustainability’ mean in an automotive industry environmental context?
- (A) The effect of automotive repair products on the environment
  - (B) The impact of automotive repair work practices on the environment
  - (C) The ongoing preservation and conservation of limited resources in the automotive repair industry
  - (D) The likelihood of remaining in business due to the use of good management practices
- 10** Where is the recommended tyre size and tyre specification found on a vehicle?
- (A) In the VIN
  - (B) On each of the wheel rims
  - (C) Around the outer rubber casing of the tyre
  - (D) On the tyre placard located on the vehicle body
- 11** Which of the following best describes ‘monocoque’ (or ‘unitised’) construction design?
- (A) The vehicle body structure is mounted on a separate chassis.
  - (B) The engine and transmission cradle supports the body structure.
  - (C) The vehicle body has a platform chassis with a bolt-on fibreglass body.
  - (D) The components in the fully welded body structure are all load bearing.
- 12** Which of the following determines the size of a metric spanner?
- (A) The thread diameter of the bolt, stud or nut
  - (B) The pitch on the thread of the bolt, stud or nut
  - (C) The distance across the flats of the head of the bolt or nut
  - (D) The distance between the points of the hexagon of the head of the bolt or nut
- 13** What are the distinguishing features of an impact socket?
- (A) Single hexagon, thick wall
  - (B) Single hexagon, chrome plated
  - (C) Double hexagon, long reach
  - (D) Double hexagon, 12-point contact

- 14** In which direction should the teeth of a hacksaw or file normally point when being used?
- (A) Forward
  - (B) Backward
  - (C) Straight down
  - (D) Diagonally across
- 15** Which of the following organisations should an employee contact in order to establish an apprenticeship or traineeship?
- (A) Australian Apprenticeships Centre
  - (B) Motor Vehicle Repair Industry Authority (MVRIA)
  - (C) Institute of Automotive and Mechanical Engineers (IAME)
  - (D) Department of Technical and Further Education (TAFE)

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Centre Number

## Section II

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Student Number

35 marks

Attempt Questions 16–21

Allow about 45 minutes for this section

Answer the questions in the spaces provided.

Marks

Question 16 (6 marks)

Complete the table.

6

<i>Component</i>	<i>Purpose</i>
Water pump	Circulates engine coolant
Battery	
Muffler	
Disc rotor	
Fuel filter	
Thermostat	
Clutch	



**Question 18** (7 marks)

- (a) Name THREE types of screwdrivers and give an example of where each of these would be used on a vehicle. **3**

	<i>Screwdriver type</i>	<i>Use</i>
1		
2		
3		

- (b) (i) Name a portable power tool that is used on vehicles. **1**

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- (ii) Give an example of a use for this portable power tool in a vehicle repair. **1**

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- (iii) Describe any safety precautions that should be taken when using this portable power tool. **2**

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Centre Number

Section II (continued)

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Student Number

**Marks**

**Question 19** (5 marks)

Describe the role of the Motor Vehicle Repair Industry Authority (MVRIA).

**5**

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**Question 20** (6 marks)

A vehicle that cannot be started is towed into a workshop. The vehicle has a 4-cylinder electronic fuel injection (EFI) petrol engine and automatic transmission.

- (a) What questions should the owner/driver be asked in order to diagnose the fault? **2**

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- (b) Explain how you would go about diagnosing the problems in the two situations described. List any equipment you would use.

- (i) The instrument cluster lights and instruments are on but the engine will not crank. **2**

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Equipment:.....

- (ii) The engine cranks but will not start. **2**

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Equipment:.....



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## Automotive

### Section III

**30 marks**

**Attempt TWO questions from Questions 22–24**

**Allow about 1 hour for this section**

Answer each question in a SEPARATE writing booklet. Extra writing booklets are available.

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In your answers you will be assessed on how well you:

- demonstrate relevant knowledge and understanding
  - communicate ideas and information, using precise industry terminology and appropriate workplace examples
  - organise information in a well-reasoned and cohesive response
  - solve proposed issues or problems
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#### **Question 22** (15 marks)

A vehicle is returned by the owner to a repair centre. The vehicle has a fault that appears not to have been rectified the last time the vehicle was serviced.

Propose strategies that the repair centre team could implement to avoid situations such as that described above and to improve communication between clients and the repair centre.

#### **Question 23** (15 marks)

Discuss the techniques used in the automotive industry to identify and avoid potential environmental hazards.

#### **Question 24** (15 marks)

Workers in an automotive worksite have recently had an unusually large number of minor workplace accidents involving burns, cuts, spillages and fumes.

Outline the employer and employee OHS responsibilities that may be relevant to this spate of workplace accidents and suggest safe work practices and procedures that may be used to reduce the high level of workplace accidents.

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