

2011

**HIGHER SCHOOL CERTIFICATE
EXAMINATION**

Industrial Technology

Automotive Technologies

General Instructions

- Reading time – 5 minutes
- Working time – $1\frac{1}{2}$ hours
- Write using black or blue pen
Black pen is preferred
- Draw diagrams using pencil
- Board-approved calculators may be used
- Write your Centre Number and Student Number at the top of page 5

Total marks – 40

Section I Pages 2–4

10 marks

- Attempt Questions 1–10
- Allow about 20 minutes for this section

Section II Pages 5–8

15 marks

- Attempt Questions 11–16
- Allow about 35 minutes for this section

Section III Page 9

15 marks

- Attempt Question 17
- Allow about 35 minutes for this section

Section I

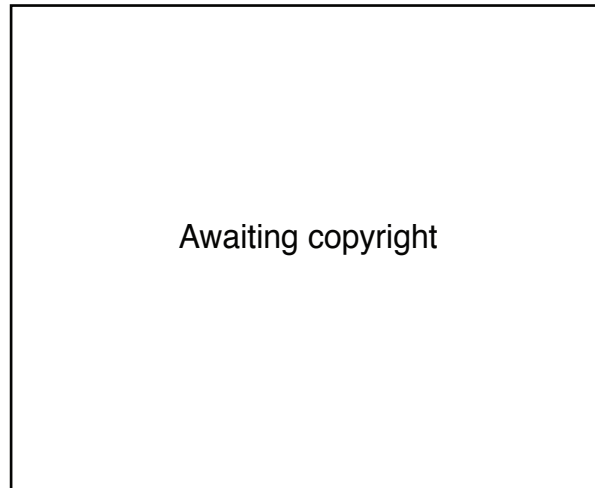
10 marks

Attempt Questions 1–10

Allow about 20 minutes for this section

Use the multiple-choice answer sheet for Questions 1–10.

1 What tool is shown?

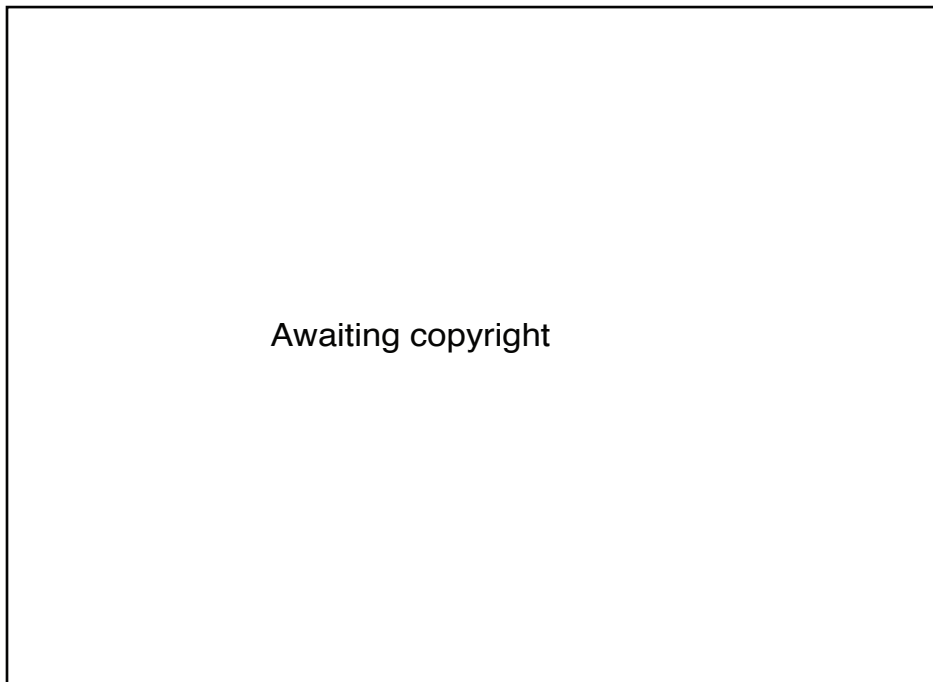


- (A) Ring compressor
- (B) Oil filter remover
- (C) Exhaust pipe locator
- (D) Radiator hose clamp

2 What is the most likely cause of a ticking noise in the head of an engine?

- (A) Piston slap
- (B) Worn lifters
- (C) A loose head
- (D) An overheating engine

- 3 Which of the following images shows a fusible link?



- 4 Which drive line component is shown?



- (A) A fly wheel
 - (B) A crown wheel
 - (C) A timing pulley
 - (D) A pressure plate
- 5 The most important reason diesel engines are commonly used in heavy transport vehicles is
- (A) the high torque levels.
 - (B) the high RPM capabilities.
 - (C) the high gear ratios available.
 - (D) the low pollution levels produced.

- 6** A car uses 42 litres of fuel to travel 480 km.
- How many litres of fuel per 100 km did the car use?
- (A) 0.0875 L
 - (B) 4.8 L
 - (C) 8.75 L
 - (D) 11.4 L
- 7** Which gear in a typical 5 speed gear box equates to a 1:1 drive ratio?
- (A) 1st gear
 - (B) 4th gear
 - (C) 5th gear
 - (D) Reverse
- 8** Labels on gearbox oil usually show the following information: SAE 70W-90.
- What do the numbers indicate?
- (A) The oil's viscosity range
 - (B) The duration cycle of the oil
 - (C) The temperatures at which the oil can operate
 - (D) The car year model for which the oil is suitable
- 9** How many litres of 2-stroke oil need to be added to 16 litres of petrol to have a 1:25 fuel mixture?
- (A) 64 L
 - (B) 4 L
 - (C) 1.56 L
 - (D) 0.64 L
- 10** Water found in the oil of an engine could indicate
- (A) a leaking radiator.
 - (B) a faulty head gasket.
 - (C) a leaking heater hose.
 - (D) a leaking radiator hose.

Industrial Technology Automotive Technologies

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Centre Number

Section II

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Student Number

15 marks

Attempt Questions 11–16

Allow about 35 minutes for this section

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

Question 11 (1 mark)

What is a common cause of brake fade?

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Question 12 (2 marks)

What are the main requirements associated with the use of a child restraint in a family vehicle?

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Question 13 (2 marks)

What are the problems associated with changing the standard ride height of a vehicle?

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Question 14 (3 marks)

Describe advances in brake technologies that have led to an improvement in braking efficiency.

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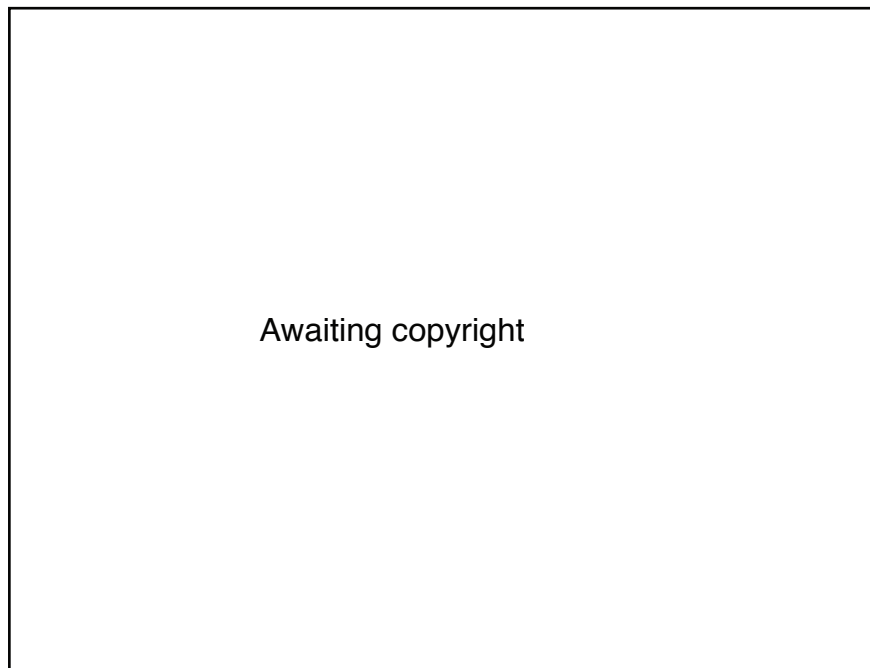
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Question 15 (3 marks)

A diagram of a carburettor is shown.

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Explain the function of the venturi in this carburettor.

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Question 16 (4 marks)

With the aid of a labelled sketch, explain the movement of oil around a typical 4-stroke engine.

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Industrial Technology

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Section III

15 marks

Attempt Question 17

Allow about 35 minutes for this section

Answer the question in a writing booklet provided. Extra writing booklets are available.

Question 17 (15 marks)

A company is expanding its operations by establishing an interstate facility.

- (a) Describe personnel issues the company needs to consider when staffing the new facility. **5**
- (b) Analyse factors, other than personnel issues, that could affect the viability of the company at the new location. **10**

End of paper

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