BOARD OF STUDIES
NEW SOUTH WALES

2013

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 5–7

15 marks

- Attempt Questions 11–15
- Allow about 35 minutes for this section

Section III Page 9

15 marks

- Attempt Question 16
- 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.

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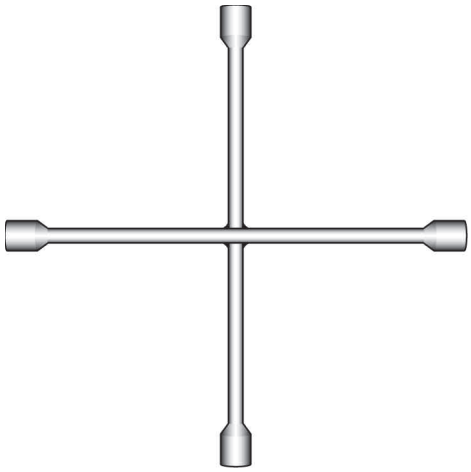
1 What is the name of the tool shown?



(A) Wheel boss

(B) Wheel brace

(C) Wheel lever

(D) Wheel master

2 Which of the following engine components holds the engine oil?

(A) The basin

(B) The reservoir

(C) The sump

(D) The tank

3 Which of the following directly operates the valves in an engine?

(A) Connecting rod

(B) Crankshaft

(C) Rocker arm

(D) Rocker shaft

4 Which type of brake provides the greatest braking power?

(A) Disc brake

(B) Drum brake

(C) Brake booster

(D) Parking brake

5 Why should tyres on a vehicle be rotated?

(A) To prolong tyre life

(B) To eliminate vibration

(C) To improve suspension

(D) To maintain tyre pressure

6 What contaminant is removed from hydraulic brake systems when they are bled?

(A) Air

(B) Dust

(C) Oil

(D) Water

7 Which steering system requires hydraulic fluid?

(A) Steering box

(B) Power steering

(C) Rack and pinion system

(D) Worm-geared steering system

8 At which stage is volatility of petrol most important in four-stroke engines?

(A) Compression

(B) Exhaust

(C) Intake

(D) Power

9 A litre of paint covers an area of 7.5 m^2. If one litre of paint costs $15.00, how much would it cost to spray TWO coats of paint on FIVE vehicles, when the total surface of one vehicle is 15 m^2?

(A) $150.00

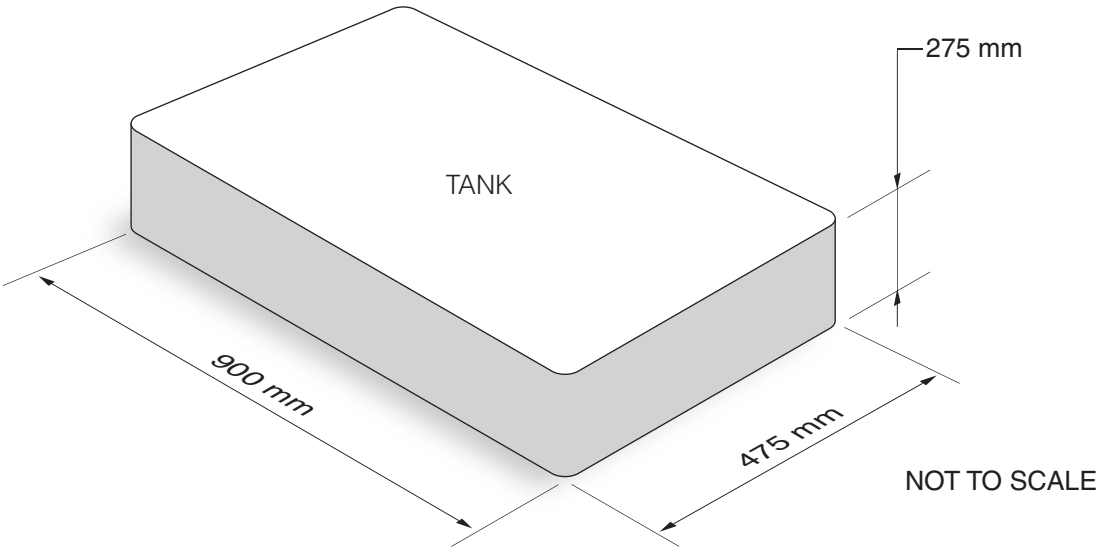
(B) $200.00

(C) $250.00

(D) $300.00

10 1000 litres of fuel has a volume of 1 m^3.

How many litres of fuel does the tank shown hold?



(A) 109.9

(B) 113.1

(C) 117.6

(D) 129.7

Industrial Technology
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Centre Number

Student Number

Section II

15 marks
Attempt Questions 11–15
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 (2 marks)

Provide TWO reasons for using lubricants in motor vehicles. **2**

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Question 12 (3 marks)

Describe how a thermostat functions in a vehicle's cooling system. **3**

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Question 13 (3 marks)

Explain how a vehicle's suspension system affects the vehicle's handling and passenger comfort. **3**

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Question 14 (3 marks)

Explain how engine management systems improve fuel efficiency. **3**

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Question 15 (4 marks)

Explain how advances in materials have improved vehicle safety. Provide examples in your response. **4**

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Section III

15 marks
Attempt Question 16
Allow about 35 minutes for this section

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

Question 16 (15 marks)

(a) Explain why a company should comply with safety standards. **6**

(b) Assess strategies that a company could implement to establish and maintain a safe work culture. **9**

End of paper

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