



4292-522 MARCH 2018
Level 2 Technical Certificate in Automotive
 Level 2 Automotive – Theory Exam (1)

If provided, stick your candidate barcode label here.

Thursday 15 March 2018
09:30 – 11:30

Candidate name (first, last)

First

Last

Candidate enrolment number

Date of birth (DDMMYYYY)

Gender (M/F)

Assessment date (DDMMYYYY)

Centre number

Candidate signature and declaration*

• If any additional answer sheets are used, enter the additional number of pages in this box.

- Please ensure that you **staple** additional answer sheets to the **back** of this answer booklet, clearly labelling them with your full name, enrolment number, centre number and qualification number in BLOCK CAPITALS.
- All candidates need to use a **black/blue pen**. **Do not** use a pencil or gel pen.
- If provided with source documents, these documents **will not** be returned to City & Guilds, and will be shredded. **Do not** write on the source documents.

***I declare that I had no prior knowledge of the questions in this assessment and that I will not divulge to any person any information about the questions.**

You should have the following for this assessment

- a pen with blue or black ink

General instructions

- Use black or blue ball-point pen. Use pencil for drawing only.
- The marks for questions are shown in brackets.
- This examination contains 12 questions. Answer **all** questions.
- Answer the questions in the spaces provided. Answers written in margins or on blank pages will **not** be marked.
- Cross through any work you do not want to be marked.
- Write all your working out and answers in this booklet.



- 1 a) State **two** health and safety requirements when handling and storing flammable liquids. (2 marks)

- b) State **two** reasons why accidents can occur in the workplace. (2 marks)

- 2 Compare the differences between being self-employed and being employed by a garage. (4 marks)

3 a) State **two** checks that are carried out when inspecting a camshaft drive belt. (2 marks)

b) Name **two** tasks that are carried out on an interim vehicle service. (2 marks)

4 a) Explain why dynamic balancing equipment is used to balance wheels and tyres. (2 marks)

b) State **two** pieces of equipment used to check the battery in Figure 1 for serviceability. (2 marks)



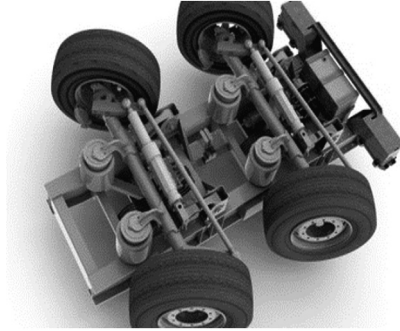
Source: <https://www.hardwareexpress.co.uk>

Figure 1

5 a) Explain the reasons why a disc brake is used on a vehicle rather than a drum brake. (4 marks)

b) State **two** reasons why a braking system is required on a vehicle. (2 marks)

6 a) i) Identify the steering system in Figure 2 and the type of vehicle it is fitted to. (2 marks)



Source: <http://www.cvdc.eng.cam.ac.uk/directory/research-themes/active-steering-of-long-combination-vehicles>

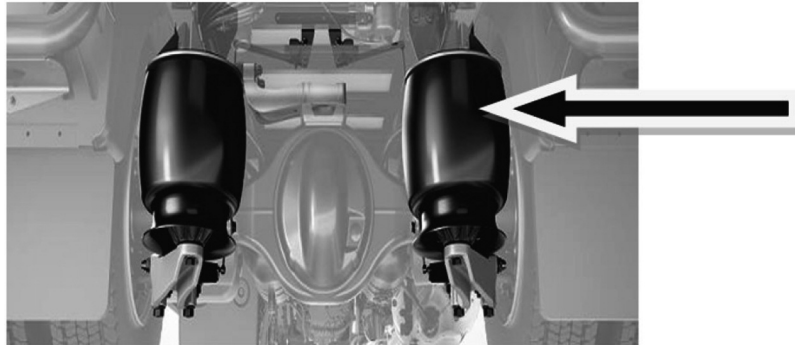
Figure 2

ii) State **two** reasons why vehicles require a steering system. (2 marks)

b) Explain what is meant by the terms 'rake' and 'trail angle' on a motorcycle steering system. (3 marks)

7 a) Explain why independent suspension systems are used. (2 marks)

b) Identify the heavy vehicle suspension component as arrowed in Figure 3. (1 mark)



Source: <http://www.mercedes-benz.co.uk>

Figure 3

8 a) i) State **two** different engine locations used by vehicle manufacturers. (2 marks)

ii) Describe why manufacturers use a range of different engine locations when designing vehicles. (2 marks)

b) Explain the four stroke cycle in a compression ignition engine. (4 marks)

c) i) Identify the engine component in Figure 4. (1 mark)



Source: <http://www.motor-car.co.uk>

Figure 4

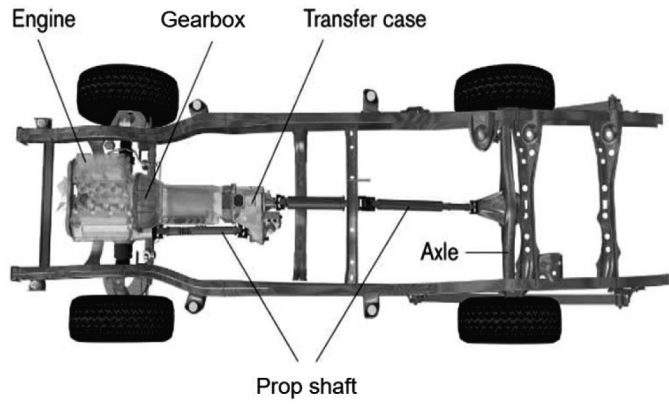
ii) State **two** reasons why the component shown is used in an engine. (2 marks)

9 a) i) Explain why it is important **not** to disconnect a battery when the engine is running. (2 marks)

ii) State **three** pieces of equipment that are used to check for correct operation of a vehicle's charging system. (3 marks)

b) State **two** internal faults that can affect a vehicle's battery. (2 marks)

10 a) Identify the drive layout of the vehicle shown in Figure 5. (1 mark)



Source: <https://www.iamnotanartist.org>

Figure 5

b) Describe how the drive is transmitted from the gearbox to the road wheels in the system shown in Figure 5. (3 marks)

11 State **one** advantage and **one** disadvantage of using a dual clutch (DSG) gearbox. (2 marks)
