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

If provided, stick your candidate barcode label here.

Thursday 14 June 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. 0 0
- 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.

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1 State **two** consumables that would require safe storage and handling in the workplace. (2 marks)

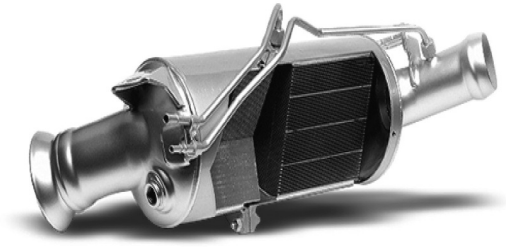
2 State **two** safety procedures to help prevent personal injury in the workplace. (2 marks)

3 Explain the benefits of operating as a franchised garage. (4 marks)

4 a) Explain how to assess the condition of an inertia reel seat belt. (2 marks)

b) State **two** different fluids that **must** be disposed of in line with government regulations following a service. (2 marks)

5 a) Identify the component in Figure 1. (1 mark)



Source: http://www.qwiklube.co.uk

Figure 1

b) State where the component in Figure 1 is fitted on a vehicle. (1 mark)

c) Name **two** checks that **must** be carried out after fitting the component shown to a vehicle. (2 marks)

6 a) Explain the principle of a hydraulic split braking system. (2 marks)

b) State the **main** purpose of a brake master cylinder. (2 marks)

7 a) Compare the advantages and disadvantages between a single track rod and a divided track rod recirculating ball steering system. (4 marks)

b) State why a caster angle is required on a vehicle steering system. (2 marks)

8 a) State **three** reasons why a suspension system is required in a vehicle. (3 marks)

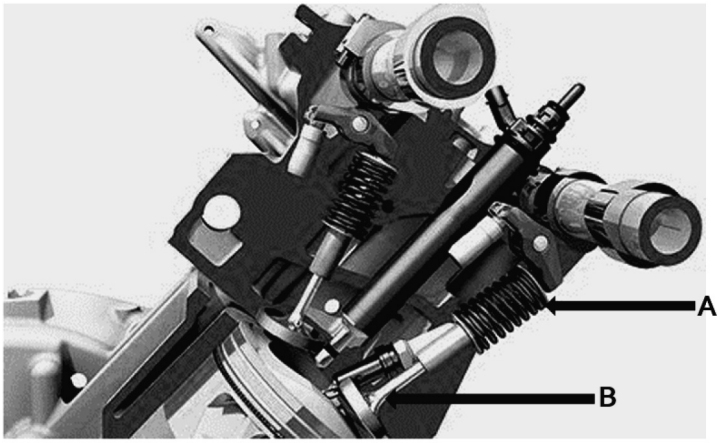
b) Explain why different materials are used in the construction of suspension system components. (3 marks)

9 a) Give **two** reasons why engines are fitted in different positions. (2 marks)

b) Summarise the reasons for using a hybrid engine. (3 marks)

c) i) Explain the terms 'inlet valve lead, inlet valve lag and valve overlap' in relation to engine valve timing. (3 marks)

ii) Identify the **two** components arrowed A and B in Figure 2. (2 marks)

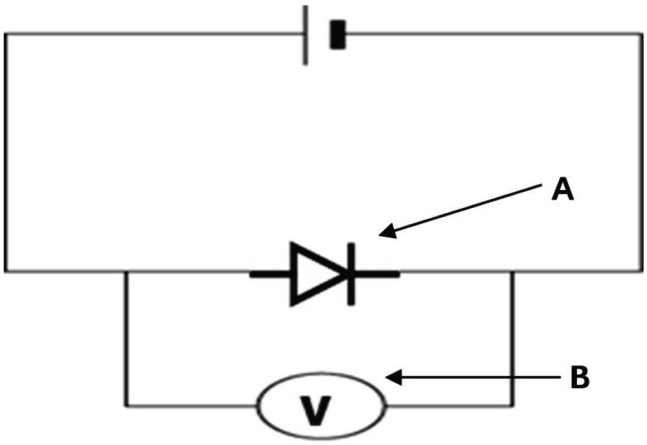


Source: http://www.openpr.com/news/430172/

Figure 2

d) Name **one** statutory requirement in the design of engines. (1 mark)

10 a) i) Identify the type of electrical circuit layout in Figure 3. (1 mark)



Source: http://www.bbc.co.uk/bitesize/quiz/q74171589

Figure 3

ii) Identify the **two** electrical symbols arrowed A and B in Figure 3. (2 marks)

iii) State what is being measured at symbol V. (1 mark)

b) Explain what symptoms a high resistance will have on a starter motor and its circuit. (2 marks)

11 a) Explain how to use the equipment in Figure 4 to remove a transmission from a vehicle on a ramp. (3 marks)

Source: https://www.amazon.com

Figure 4

b) State **two** reasons why a gearbox is used in a vehicle. (2 marks)

c) State **two** symptoms of a clutch failing in a vehicle. (2 marks)

12 A vehicle has been bought into the workshop after smoke was coming from the bonnet. Upon investigation, it is apparent that there has been an electrical short on the charging circuit which has caused excessive damage to the wiring and alternator.

Propose a procedure for carrying out the checks; include health and safety considerations, repairs and testing of the charging circuit. (9 marks)

End of assessment