



**0171-518 MARCH 2018**

**Level 3 Advanced Technical Extended Diploma in Land-Based Engineering (1080)**

Level 3 Land-Based Engineering – Theory exam (2)

If provided, stick your candidate barcode label here.

**Friday 9 March 2018**  
**13:30 – 15:30**

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 examination**

- a pen with blue or black ink
- a non-programmable calculator

**General instructions**

- Use black or blue ball-point pen.
- The marks for questions are shown in brackets.
- This examination contains 11 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.

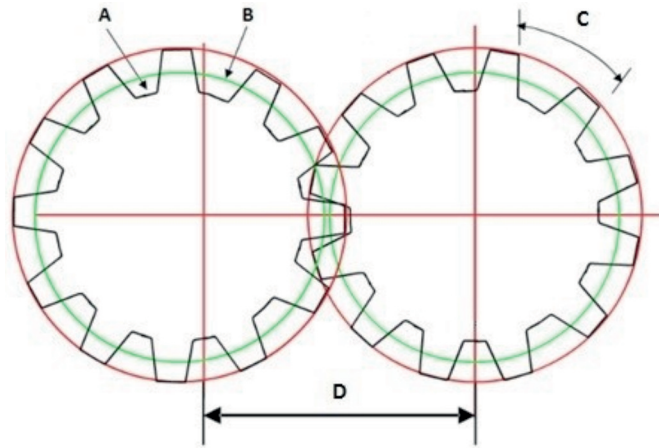






4 Using Figure 3, identify the points marked A and C.

(2 marks)



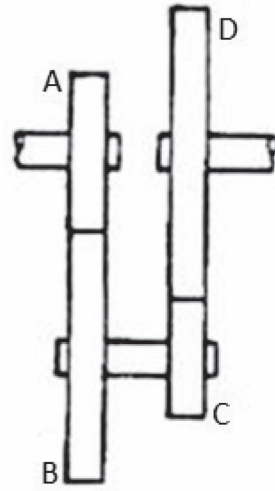
<http://www.technologystudent.com>

**Figure 3**

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- 5 Figure 4 shows a compound gear train. Gear A has 40 teeth, gear B has 60 teeth, gear C has 20 teeth and gear D has 80 teeth. Determine the overall ratio of the drive train, showing all working. (4 marks)

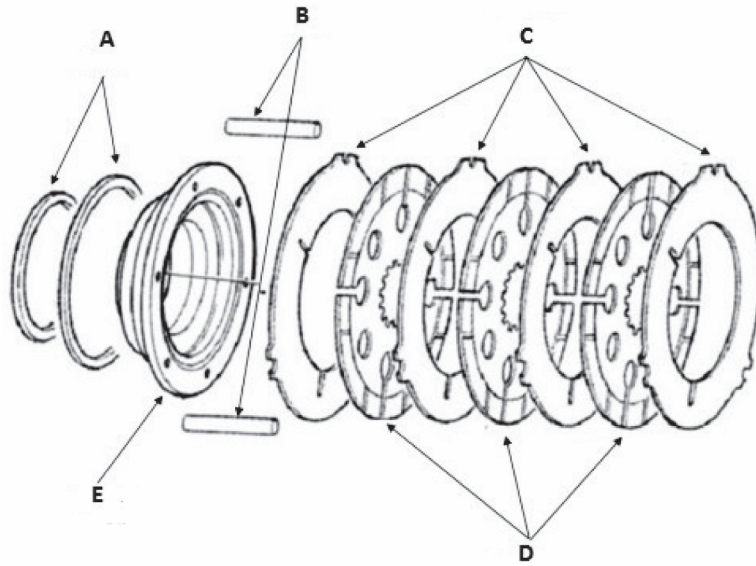


<http://thecartech.com>

**Figure 4**

6 a) Identify the type of clutch shown in Figure 5.

(1 mark)



<http://www.engineeringinspiration.co.uk>

Figure 5

b) Using Figure 5, identify components C, D and E.

(3 marks)

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7 Describe **two** functions of a synchroniser in a sychromesh transmission.

(2 marks)

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8 a) Describe **two** methods of engaging a synchroniser in a synchromesh transmission system. (4 marks)

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b) A synchroniser keeps disengaging. What is the **most** likely cause of this problem? (1 mark)

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9 A tractor with a full powershift transmission has a slipping clutch within the system. Explain **three** possible causes of the problem and how they affect the operation of the system. (6 marks)

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10 a) Identify the type of transmission system shown in Figure 6. (1 mark)

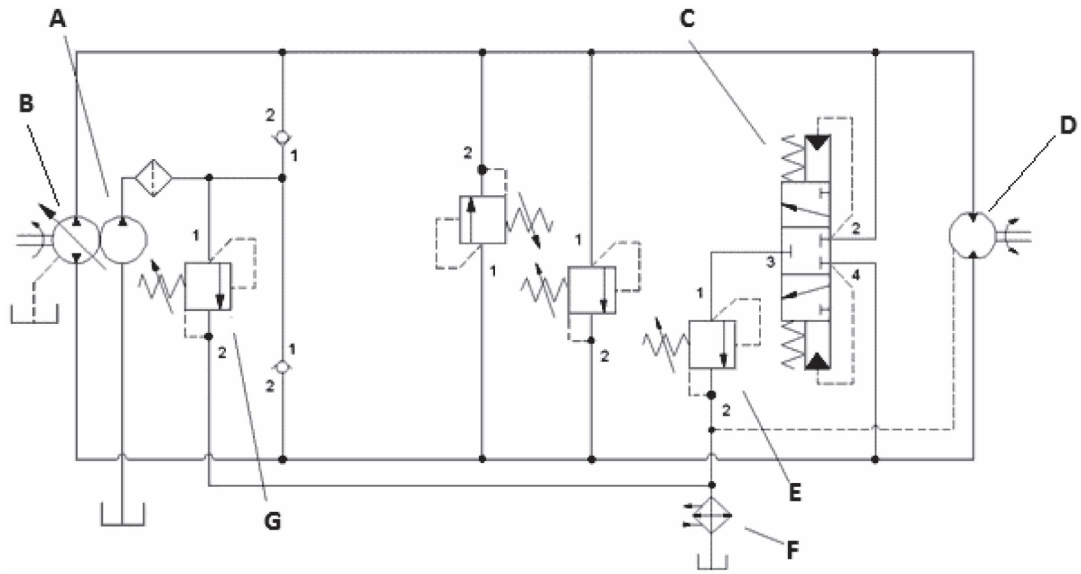


Figure 6

b) Using Figure 6, identify the components labelled A, C and D. (3 marks)

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