



0171-518 MARCH 2022

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 4 March 2022
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 additional answer sheets are used, enter the additional number of pages in this box. 
- Before taking the examination, **all candidates** must check that their barcode label is in the appropriate box. Incorrectly placed barcodes may cause delays in the marking process.
- Please ensure that you staple additional answer sheets to the **back** of this answer booklet, clearly labelling these 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, unless otherwise instructed.
- 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 examination 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

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.



1 Name **four** types of chain used in power transmission.

(4 marks)

2 Explain **three** advantages of a chain drive system over a belt drive system.

(6 marks)

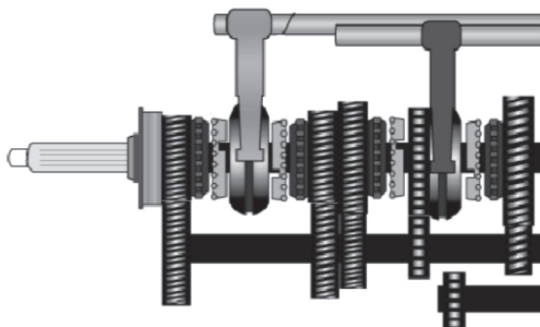
- 3 Complete Table 1.
Give **one** cause for **each** of the symptoms found on Vee belt transmission systems. (5 marks)

Symptom	Cause
Rapid side wall wear	
Belt soft, swollen	
Belt slips, squeals	
Underside cracked	
Belt cover split	

Table 1

- 4 State **four** measurements that could be taken when setting the crown and pinion gears within a differential. (4 marks)

5 This question relates to the working principles of the transmission for the gear selected in Figure 1.



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Figure 1

a) Describe the power flow, through the transmission in Figure 1. (6 marks)

b) Explain how blocker ring wear, can be identified within a synchroniser using feeler gauges. (3 marks)

(Total marks 9)

6 Describe the consequence of clutch cable stretching on a synchromesh transmission system. (2 marks)

7 Identify **four** wearing components within a hydraulic clutch-pack. (4 marks)

8 Explain **three** reasons why hydraulic clutch-packs require calibration. (6 marks)

9 Explain **two** advantages of a hydrostatic transmission system, fitted with both a variable displacement pump and motor. (4 marks).

10 Explain the operation of the hydrostatic unit within a hydro-mechanical (CVT) transmission for forward motion. (4 marks)
