HM Government

T-LEVELS

T Level Technical Qualification in Agriculture, Land Management and Production (Level 3)

Paper 2 – Land-based engineering Core Pathway (8717-032)

If provided, stick your candidate barcode label here.

Date of exam: tbc
Duration: 2 hours

Candidate name (first, last)

First

Last

Candidate enrolment number

Date of birth (DDMMYYYY)

Gender (M/F)

Assessment date (DDMMYYYY)

Centre number

Candidate signature/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
- a calculator

General instructions

- The marks for questions are shown in brackets.
- This examination contains **18** 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.

City & Guilds

This exam has been split into **two** sections. Below details the types of questions and marks available for each section. Please allow time for each section accordingly.

Section A is made up of **44** marks and includes **15** short answer and medium answer questions.

Section B is made up of **36** marks and includes **3** extended response questions.

Section A

1 Recycling is one of the principles of waste management.

a) Name **one** other principle.

(1 mark)

b) What does COSHH stand for?

(1 mark)

2 Labour, parts and sundries/consumables are the main components of an invoice for a machinery service.

Identify **two** different examples of other individual costs.

(2 marks)

3 List the **first two** control measures in the hierarchy of hazard control.

(2 marks)

4 Describe the requirements for the disposal of hazardous waste.

(2 marks)

5 Explain **one** reason why it is important to use mechanical supports when lifting with a hydraulic jack.

(2 marks)

6 Give **two** examples of how stock levels are managed to meet seasonal demand.

(2 marks)

7 Explain why a customer may prefer a quotation instead of an estimate.

(2 marks)

8 a) Explain **one** example of disruption to the supply chain caused by political external influences.

(2 marks)

b) Explain **one** example of disruption to the supply chain caused by environmental external influences.

(2 marks)

9 State the Ohms law formula used to calculate electrical resistance.

(1 mark)

10 Each cylinder within a four-cylinder compression ignition engine has a bore of 105 millimetres (mm) and a stroke of 127 millimetres (mm).

a) State the formula used to calculate the capacity of a cylinder.

(1 mark)

b) Calculate the capacity of **one** cylinder to the nearest cubic centimetre (cc).

(2 marks)

11 There has been an outbreak of a notifiable disease in the poultry industry.

A customer from this industry, who is not currently affected, requires some repairs to be made to their materials handler which is used to transport the poultry food.

Explain **two** contamination control measures which a technician would follow in order to manage the risks of the notifiable disease.

(4 marks)

12 A granular fertiliser spreader's ferrous metal component has seized with age.

a) Explain what has happened to cause the seizure of the ferrous metal component.

(3 marks)

b) Give **one** action that could be taken to prevent another seizure due to the same cause.

(1 mark)

13 A diesel exhaust fluid (DEF) injector is used to reduce emissions in a machine's compression ignition engine. A faulty software update has caused the diesel exhaust fluid injector to fail.

Explain **two** consequences of the DEF injector failure for a machine.

(4 marks)

14 Explain **two** reasons why a hydrostatic power transmission system is used instead of a mechanical power transmission system on a rough terrain materials handler.

(4 marks)

15 A land-based engineering company has recently recruited three new staff, taking the total number of staff to seven.

Explain the implications of the increase in staff numbers on the employer's responsibilities under the Management of Health and Safety at Work Regulation 1999.

(6 marks)

Section B

16 A customer has a telescopic handler with a liquid cooled diesel engine. The customer reports that the cooling system overheats under normal working conditions.

A senior technician has carried out daily operator checks, including checking coolant level, fan belt tension, and the air flow through the radiator. They have identified that there is a faulty component within the cooling system.

Analyse how the operation of the components could cause the system to overheat and justify any tests of conformity.

(12 marks)

17 A self-propelled ride-on mower is fitted with a traditional lead acid battery and solenoid pre-engaged starter motor. The starter motor operates slowly and will not start the engine. The engine and the cold start mechanism operate correctly.

A senior technician has carried out the recommended operator checks and confirmed that the charging system and other electrical circuits are functioning correctly. They have identified that there is a faulty component within the starting system.

Analyse how the operation of the components could cause the starting system to malfunction and justify any tests of conformity.

(12 marks)

18 On a 3.6 Litre multi-cylinder compression ignition engine powered generator, a customer reports that the engine oil pressure light flickers at lower engine speeds when at operating temperature. The engine has 8,000 hours of operation.

A senior technician has carried out an initial investigation and confirmed that the engine had been serviced to the manufacturer's specification, and the correct engine running speeds have been set.

Analyse how faulty operation of the engine components would cause the engine oil pressure light to flicker and justify any tests of conformity.

(12 marks)

End of Assessment

Copyright in this document belongs to, and is used under licence from the Department for Education, © 2023 - 2026.

'T-LEVELS' and 'T Level' are registered trade marks of the Department for Education.

© City & Guilds Limited is authorised by the Department for Education to develop and deliver this T Level Technical Qualification.

City & Guilds is a registered trade mark of © City & Guilds Limited.