0171-518 – Level 3 Land-based Engineering – Theory Exam (2)

March 2024

Examiner Report

Contents

Introduction

This document has been prepared by the Chief Examiner, it is designed to be used as a feedback tool for centres to use in order to enhance teaching and preparation for assessment. It is advised that this document be referred to when preparing to teach and then again when candidates are preparing to sit examinations for City & Guilds Technical qualifications.

This report provides general commentary on candidate performance and highlights common themes in relation to the technical aspects explored within the assessment, giving areas of strengths and weakness demonstrated by the cohort of candidates who sat the **March 2024** examination series. It will explain aspects which caused difficulty and potentially why the difficulties arose, whether it was caused by a lack of knowledge, incorrect examination technique or responses that failed to demonstrate the required depth of understanding.

The document provides commentary on the following assessment:
0171-518 Level 3 Land-based Engineering – Theory Exam (2).

Theory Exam – March 2024
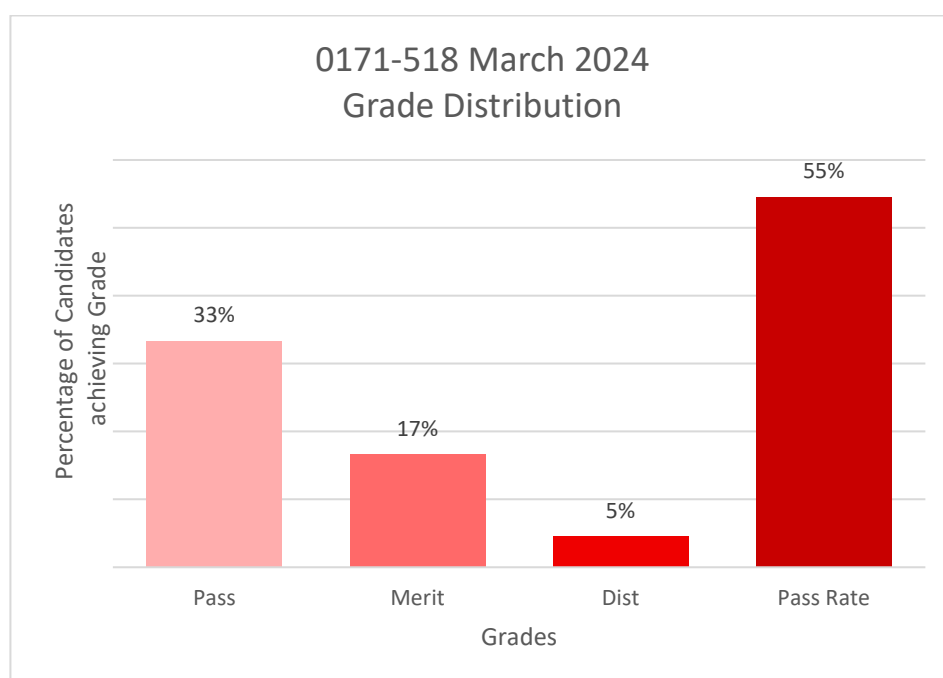
Grade Boundaries and distribution

Assessment: **0171-518**
Series: **March 2024**

Below identifies the final grade boundaries for this assessment, as agreed by the awarding panel:

Total marks available	60
Pass mark	24
Merit mark	33
Distinction mark	42

The graph below shows the approximate distribution of grades and pass rates for this assessment:

Chief Examiner Commentary

General Comments on Candidate Performance

Assessment component: 0171-518

Series 1 (March)

In general, all candidates performed similarly to previous series by responding well to explain questions (AO2), providing a good degree of depth. Candidates performed well in unit 358 *Repair land-based mechanical power transmission systems*. However, candidates struggled with questions on unit 359 *Understand land-based synchromesh transmissions and clutches*.

Overall, most candidates used recognised terminology and structured their process with a good degree of logic. Although, a number did use some diagnostic techniques which would be more suitable to a powershift or mechanical transmission.

Candidates generally included the risk assessment process and made mention to safe working processes; however, this was not as regular as in past series. Candidates were unable to identify the need to remove stored energy from the system.

Areas of strength
- Identifying bearings.
- Explaining of wear of gear drive train systems.
- Responding to potential symptoms of overload on a belt drive system.
- AO2 questions a 'cause and effect' type response was common in most responses demonstrating that candidates were well prepared for this type of question.

Areas which proved more challenging
- Synchromesh gear transmissions – candidates showed little understanding of these systems and their operating principles.
- Four-wheel drive systems – candidates demonstrated minimal depth of knowledge and understanding. Broadly, candidates were able to identify that wear would take place, however they were unable to explain why this wear would occur and how operating with two-wheel drive on the road would prevent this.
- The control of electro-hydraulic clutches was an area where breadth of knowledge was lacking with many candidates only able to access one or two marks when identifying the inputs which would be needed to control the clutch.

Areas with differentiation
- Misalignment in a gear train system. Overall candidates demonstrated a breadth of understanding by accessing marks consistently when responding to potential symptoms of overload on a belt drive system. Albeit this question did allow for limited differentiation between high and low scoring candidates.
- Candidates found questions that looked at specific components of systems, such as synchromesh transmissions systems, powershift transmission systems or hydrostatic transmission systems challenging whether this was identifying them from a schematic or in a pictorial form. Higher scoring candidates accessed marks consistently throughout the paper, however low scoring candidates missed out on identifying marks on a regular basis.

The Extended Response Question
The ERQ required candidates to diagnose a fault within a hydrostatic transmission system fitted to a material handler. Candidates performed well in this question, with 98.5% of candidates gaining some marks (90% of which achieved band 2 or above). Candidates covered relevant areas such as oil changes, filters, and pressure testing. The vast majority of answers included

using an electronic diagnostic device and described the process accurately. Some of the higher scoring candidates suggested typical readings and plausible faults, whilst mentioning key hydrostatic transmission system components.

All documents are available to download from [Technicals in Agriculture and Land-based Engineering qualifications and training courses | City & Guilds (cityandguilds.com)](https://cityandguilds.com)

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Exam guide: Documents – Level 3 – Assessment materials