0171-018/518 – Level 3 Advanced Technical Extended Diploma in Land-Based Engineering (1080)

March 2020

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 2020** 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;
0171-018/518 Level 3 Land-based Engineering - Theory Exam (2)

Theory Exam – March 2020

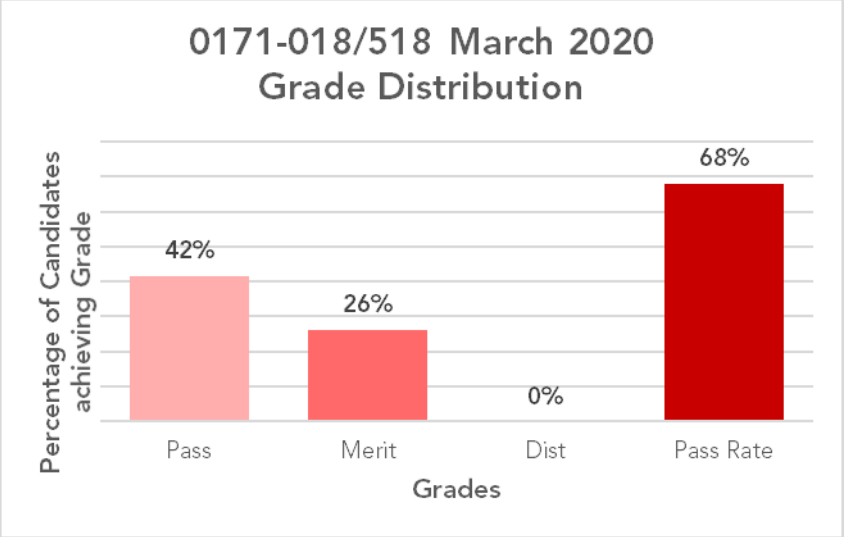
Grade Boundaries and distribution

Assessment: **0171-018/518**
Series: **March 2020**

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: 0171-018/518

Series 1 (March)

The candidates' performance in this series was wide ranging. There was evidence of candidates with a clear understanding across assessed topics and those who had limited understanding of the majority of the assessed units.

Overall, candidates showed a good spread of knowledge of the subjects areas covered although there was a distinct lack of depth evident regarding more modern technologies and the components and parts utilised within them. This was not the case with more traditional technologies, where answers demonstrated a deep understanding and comprehensive knowledge.

Candidates seemed to have an excellent grasp of the components, operating principles and factors, which affect the operation of a conventional dry clutch. This was particularly clear when considering the implications of wear with reference to specific components. Candidates had a comprehensive understanding of synchronisers and their function within synchronised transmission. Candidates were able to identify hydrostatic systems through a schematic communication and in general could accurately identify component parts of the system from symbols within a schematic.

There was a spread of knowledge around the factors limiting torque transmission and the factors limiting the influence of this within all clutches in the sector. A good standard of understanding was shown in relation to the symptoms that could be identified to diagnose overloading of slip clutches. However, candidates did not demonstrate understanding of the causes linked to the failure symptoms.

Many candidates failed to identify the key reasons why a dual clutch/direct drive transmission delivered reduced power losses. Many confused this with a traditional two-stage clutch used to control transmission and PTO output. Most candidates struggled to calculate output speed using gear ranges within a simple gearbox and what impact this would have on output torque. There seemed to be a lack of knowledge in the calculating of ratios and determining output speeds from input speeds.

The advantages of a hydrostatic transmission over a power shift transmission were not identified particularly strongly. Many suggested it required less maintenance and was less complicated, both of which are incorrect. Candidates generally failed to identify the correct procedure to diagnose a fault in a hydrostatic system on identifying brass/bronze filling in transmission oil. Most candidates went down a route of flow and pressure testing rather than identifying possible components and stripping down to visually inspect. There was also a failure to drill in to deeper understanding by identifying the key components containing brass/bronze materials within a common hydrostat setup.

The extended response question was attempted to a good standard. Candidates were asked to discuss the steps required to carry out a full diagnostic assessment to identify faults in a mechanical transmission with a powershift high/low element. The majority of responses were logical and followed an accepted diagnostic process. The differential was in the detail and suggested faults that could be identified. The majority of candidates failed to identify any testing or diagnosis on the electrical area of the power shift element of the transmission and only some investigated the hydraulic element of this control element of the transmission. Candidates focused on the mechanical elements of the transmission and demonstrated good knowledge of procedures

and tests to identify and then repair common faults. This included the dry clutch and the synchro mechanisms within the transmission.

It is recommend that centres expose candidates to modern technologies and, in particular, the diagnostic process regularly used to identify faults within these systems as they become more commonplace within the sector.

Centres are reminded of the City and Guilds Technicals exam guides available here

https://www.cityandguilds.com/-/media/productdocuments/land_based_services/agriculture/0171/level_3/assessment_materials/0171-018_and_518_technicals_exam_document_2019_v2-pdf.ashx