

6720-37 Level 3 Advanced Extended Technical Diploma in Constructing the Built Environment (1080)

Pathways: Construction

Design and Planning

Civil Engineering

2018

Qualification Report

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Introduction

This document has been prepared by the Chief Examiner and Principal Moderator; it is designed to be used as a feedback tool for centres in order to enhance teaching and preparation for assessment. It is advised that this document is referred to when planning delivery and when preparing candidates for City & Guilds Technical assessments.

This report provides general commentary on candidate performance in both the synoptic assignment and theory exam. It 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 assessments in the 2018 academic year. It will explain aspects which caused difficulty and potentially why the difficulties arose.

The document provides commentary on the following assessments;

Year 1

- All Pathways:
 - 6720-042/542 Level 3 Constructing the Built Environment – Theory exam
 - March 2018 (Spring)
 - June 2018 (Summer)
 - 6720-043 Level 3 Constructing the Built Environment – Synoptic Assignment

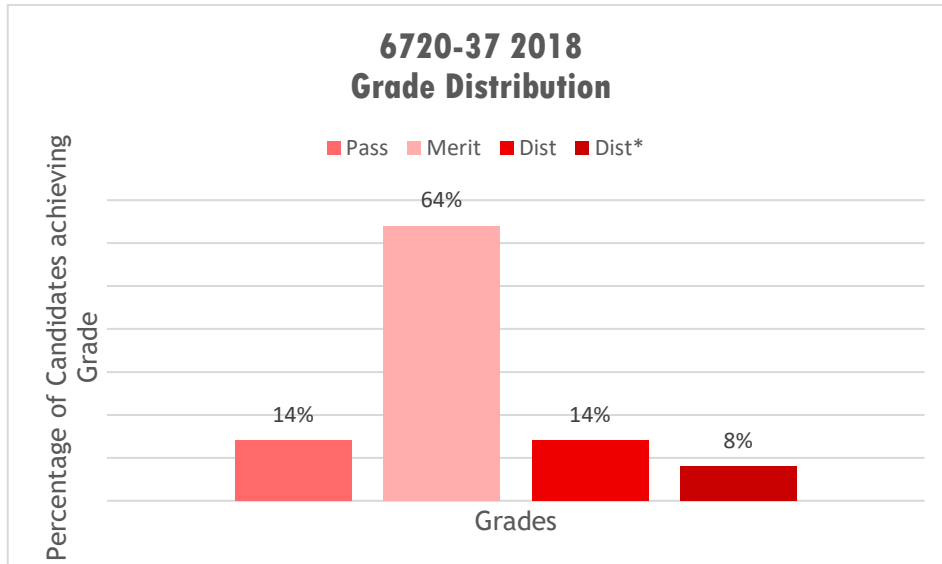
Year 2

- Pathway 1 – Construction:
 - 6720-052/552 Level 3 Constructing the Built Environment – Theory exam
 - March 2018 (Spring)
 - June 2018 (Summer)
 - 6720-047 Level 3 Constructing the Built Environment – Synoptic Assignment
- Pathway 2 – Design and Planning:
 - No registrations this year.
- Pathway 3 – Civil Engineering:
 - 6720-556 Level 3 Constructing the Built Environment – Theory exam
 - March 2018 (Spring)
 - June 2018 (Summer)
 - 6720-057 Level 3 Constructing the Built Environment – Synoptic Assignment

Qualification Grade Distribution

Pathway 1 - Construction

The grade distribution for this qualification is shown below;



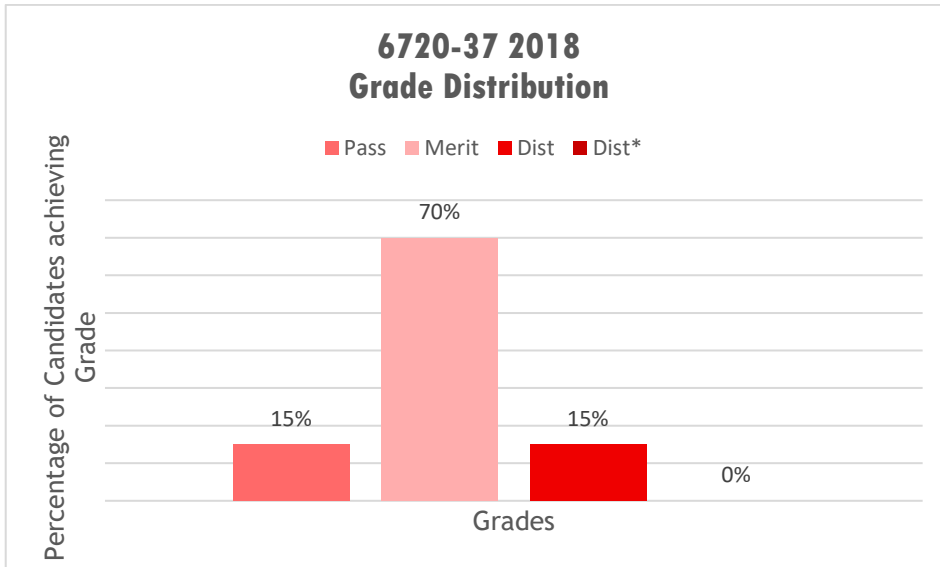
Please note City & Guilds will only report qualification grades for candidates who have achieved all of the required assessment components, including Employer Involvement, optional units and any other centre assessed components as indicated within the Qualification Handbook. The grade distribution shown above could include performance from previous years.

Pathway 2 - Design and Planning

There is no grade distribution for this qualification pathway as there were no entries in 2018.

Pathway 3 - Civil Engineering

The grade distribution for this qualification is shown below;



Please note City & Guilds will only report qualification grades for candidates who have achieved all of the required assessment components, including Employer Involvement, optional units and any other centre assessed components as indicated within the Qualification Handbook. The grade distribution shown above could include performance from previous years.

Theory Exams – Year 1

All Pathways

Grade Boundaries

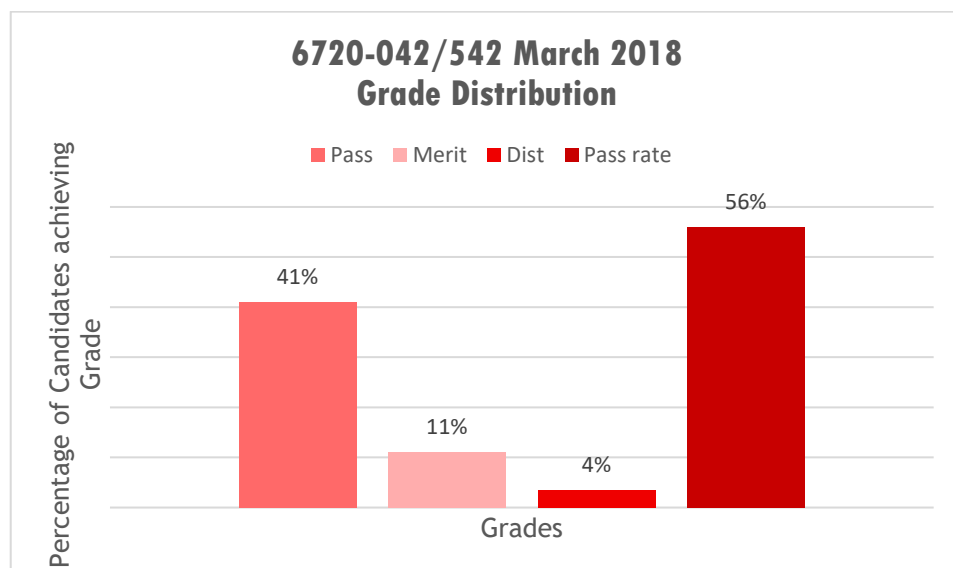
Assessment: 6720-042/542

Series: March 2018 (Spring)

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

Total marks available	90
Pass mark	35
Merit mark	48
Distinction mark	61

The graph below shows the distributions of grades and pass rate for this assessment;

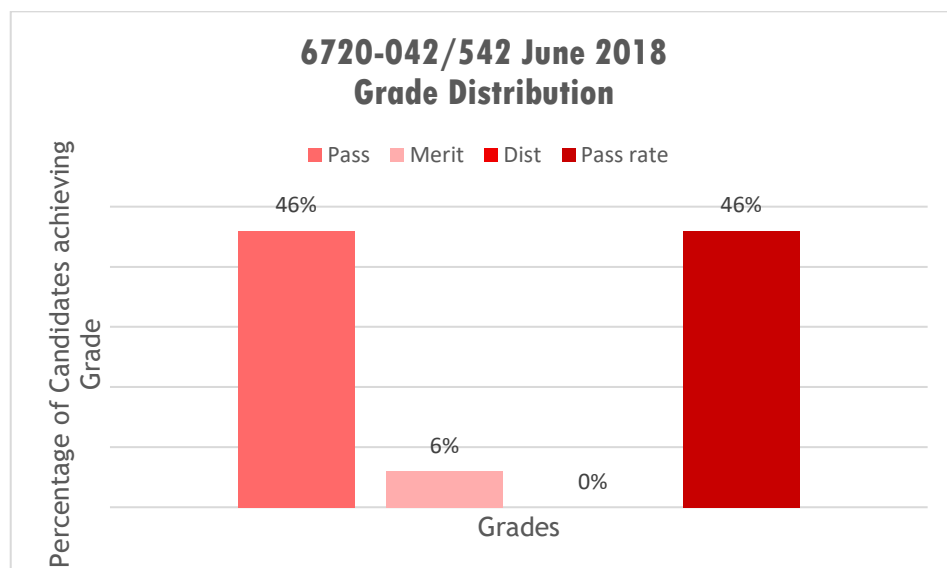


Assessment: 6720-042/542
Series: June 2018 (Summer)

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

Total marks available	90
Pass mark	35
Merit mark	48
Distinction mark	61

The graph below shows the distributions of grades and pass rate for this assessment;



Chief Examiner Commentary

6720-042/542 Level 3 Constructing the Built Environment – Theory exam

Series 1 – March 2018 (Spring)

The candidates' performance across the paper was acceptable, with most of the candidates being able to answer many of the AO1 (Recall knowledge) questions and some being able to provide reasonable to good responses to the AO2 (Demonstrates understanding) type questions. In general, those candidates who answered the AO1 questions accurately and fully, went on to answer the AO2 questions more clearly and hence, to achieve higher marks.

Candidates performed better on questions that dealt with health and safety and construction site supervision than on the more technical detail involved in the construction of both domestic and industrial/commercial buildings. Candidates need to be able to specify and describe construction methods and techniques. They need to underpin that knowledge with explanations of how both are used and why they have been selected for the task in hand. Centres are reminded that examiners are looking for breadth and depth of knowledge and that both are generally indicated by the command verb used (identify, describe, explain how, explain why, for example).

In many instances, candidates limited their responses to stating, naming or identifying methods and techniques, rather than describing or explaining them, as the question demanded. There were several scripts where the candidates failed to attempt all of the questions. Centres are reminded that this will inevitably impact on the overall mark.

Centres are advised to revisit current handbooks, test specifications and previous papers to fine-tune the delivery of their programmes.

Extended Response Question

The Extended Response Question generated many reasonable to very good responses and, by and large, those candidates who did well in the paper generally, were those who provided the clearest and most accurate responses. Candidates who did less well on this question tended not to discuss the issues raised by it and restricted themselves to identification and, on occasions, description.

6720-042/542 Level 3 Constructing the Built Environment – Theory exam

Series 2 – June 2018 (Summer)

Overall the performance of this paper was good. Candidates generally performed well on items related to Unit 303 health and safety in the built environment. Other questions that were answered well by candidates included those asking for recall of information relating to construction technology, the naming of secondary elements, disadvantages of traditional methods of construction and use of laminated timber for portal frame design.

General areas of weakness included understanding why laminated timber would be specified for a portal frame. Candidates simply gave the characteristics of laminated timber, as well as generalised statements that timber was stronger than steel, without any supporting evidence. Candidates also struggled with the question on permits to work and gave weak definitions when describing ground improvement techniques. The questions relating the Unit 304 Construction site supervision were answered with limited understanding shown, particularly on project documentation.

Higher scoring candidates were able to give linked responses to the explanation of Energy Performance Certificates (EPCs), thin joint construction technique, why laminated timber may be specified for a portal frame design, most health & safety items and some site supervision questions. These candidates often achieved marks across the paper and scored well within the extended response question.

Lower scoring candidates struggled with contextualised questions, often not relating their responses to the context of the question, or were unable to provide linked responses to identified issues. For the question relating to Energy Performance Certificates (EPCs), candidates simply discussed in generic terms the need to conserve energy at a high level, rather than what the question asked which was to give an explanation as to why it could be used to support the energy performance of domestic buildings. These candidates struggled with some construction technology concepts including explaining the term 'thin joint' as applied to masonry wall specifications. They also lacked detail in questions relating to Unit 304 Construction Site Supervision, for example, in one question many candidates were unable to give a coherent explanation of the link between the site supervisor and buyer with respect to procurement practices. The lower scoring candidates only focused on the need to seek prices and to check materials when they arrived on site.

Extended Response Question

Candidates gave responses to issues on health and safety, and sustainable techniques were identified and then expanded on with some linked explanation to the benefits of adopting such practices/methods. Candidates were able to explain some aspects linked to construction forms, sustainability methods and health & safety requirements. However, in many cases responses did not discuss in any real detail site supervision issues. The responses on why the local authority is keen on using locally-sourced materials and components were weakly answered and the majority of candidates did not give the correct documents that would be used to reduce risk on site during construction.

Lower scoring candidate responses simply repeated their responses from previous questions in the exam and so didn't demonstrate a breadth of knowledge and understanding of all the units assessed by the Extended Response Question.

Theory Exams – Year 2

Pathway 1 - Construction

Grade Boundaries

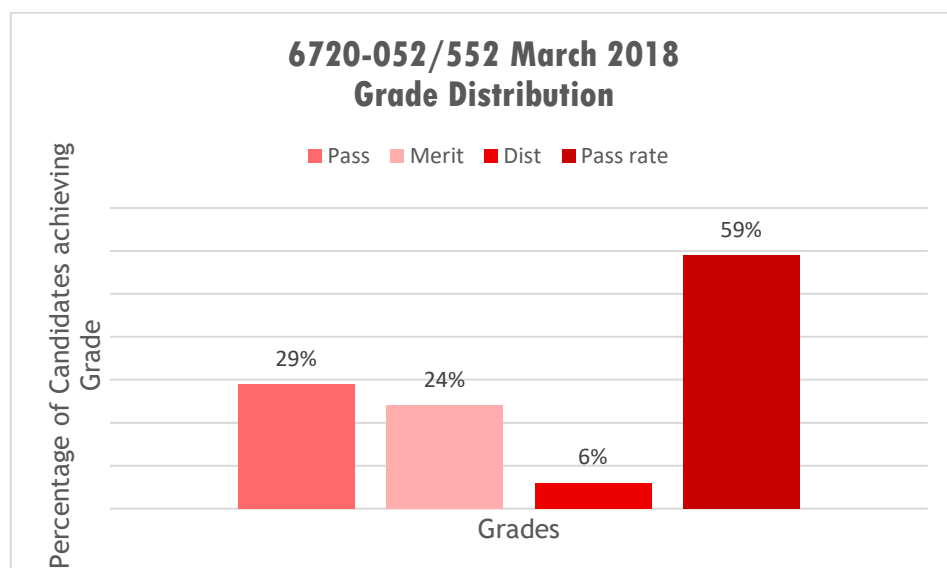
Assessment: 6720-052/552

Series: March 2018 (Spring)

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

Total marks available	90
Pass mark	35
Merit mark	48
Distinction mark	62

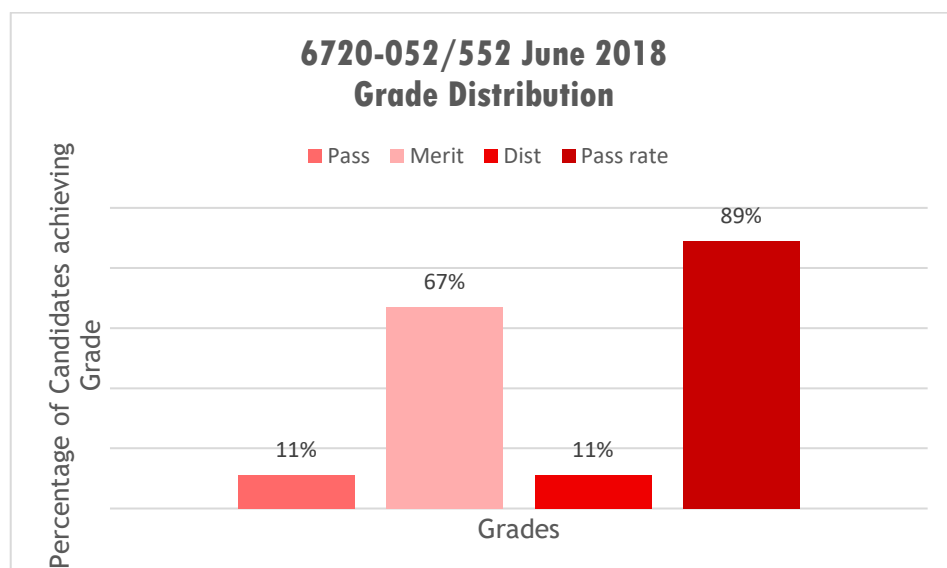
The graph below shows the distributions of grades and pass rate for this assessment;



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

Total marks available	90
Pass mark	35
Merit mark	49
Distinction mark	63

The graph below shows the distributions of grades and pass rate for this assessment;



Chief Examiner Commentary

6720-052/552 Level 3 Constructing the Built Environment – Theory exam

Series 1 – March 2018 (Spring)

The candidates generally did well in dealing with the examination requirements. There was evidence of good preparation being taken by candidates. Centres are to be commended on their interpretation of the pathway topics. There were a few (but noticeably few) questions or parts of questions not attempted by candidates and centres should be asked to remind candidates of the importance of attempting an answer in all cases.

Notable strengths in this paper included knowledge of building technology, building services, health and safety in construction and legislation.

Areas of weaknesses included those related to the differences between planning and non-planning legislation and the different types of surveys used in property leasing. These are important specific examples of knowledge in the 052/552 pathway and should be noted as teaching and learning points for centres going forward.

Centres are advised to revisit current handbooks, test specifications and previous papers to fine-tune the delivery of their programmes.

Extended Response Question

A key aspect of the Extended Response Question was to show a good level of understanding of the types of building surveys needed and the procedures used in a building refurbishment and conversion project including the installation of drainage and water building services.

Lower ranges of marks were awarded where a candidate answered only on the technical side of construction technology and often only in a brief, descriptive way that did not get to the depth of a point.

Candidates were awarded higher marks in this question when they dealt with both the technical details and building survey procedures and practice in the context of the stated brief. Making sure to note as many elements of building refurbishment and conversion as possible and also applying knowledge and understanding of the main principles and practices of building surveying.

Series 2 – June 2018 (Summer)

The 052/552 paper had 25 questions in the June 2018 series and overall, candidates did very well in dealing with the examination requirements, indicating good preparation. Centres are to be commended on their interpretation of the pathway topics and sub-topics. There were very few non-attempts at specific questions, which is also a good indicator of effective centre and candidate preparation.

Notable strengths included knowledge and understanding of the difference between surface water and foul water sources and drainage / disposal systems, the value of capturing rain water / surface water and using it in the built environment and clear thinking generally on many sustainable building design and construction technical issues. Good awareness of the importance of planned maintenance in buildings / built environment management, the reasons for qualified contractors in building services installations (electricity and gas) and the critical importance of construction workmanship and the implications of poor workmanship was demonstrated. Responses also showed a good understanding of Approval Document E regarding sound insulation and noise transfer reduction and also the main technical solutions to noise transfer in flats (mass, insulation, avoiding gaps etc). There was also awareness of the technical issues associated with designing buildings and landscapes for improved public health and wellbeing, although some candidates confused the design and planning of the built environment for communities with health and safety on construction sites.

Areas of weakness within this paper included responses relating to an understanding of hot water plumbing supply options, the tendering process (design specification sent out, contractors prices received, contractor appointed) and the role of a building surveyor in the legal context of built environment matters such as boundary disputes and expert witness consulting.

Extended Response Question

The answers to the Extended Response Question showed that candidates had prepared very well for this part of the examination, read the question and noted its requirements: (why there is a need to refurbish older buildings, the building surveyor's role, building regulations/approved documents, plumbing / drainage and planned maintenance). The knowledge of the Building Regulations Approved Documents (letter codes and what each one refers to) was very good indeed. The ERQ answers showed a significant improvement over those in the March 2018 series.

Pathway 3 - Civil Engineering

Grade Boundaries

Assessment: 6720-556

Series: March 2018 (Spring)

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

Total marks available	90
Pass mark	36
Merit mark	49
Distinction mark	63

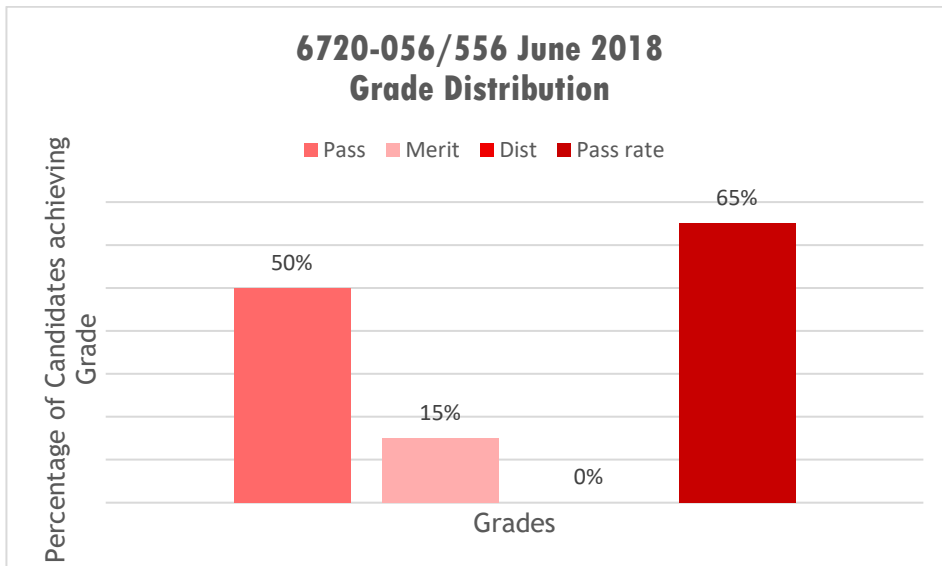
There are no grade boundaries for this assessment as no candidates passed the March 2018 series of the 6720-556 theory exam.

Assessment: 6720-556
Series: June 2018 (Summer)

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

Total marks available	90
Pass mark	34
Merit mark	47
Distinction mark	61

The graph below shows the distributions of grades and pass rate for this assessment;



Chief Examiner Commentary

6720-556 Level 3 Constructing the Built Environment – Theory exam

Series 1 – March 2018 (Spring)

Overall, responses in this examination were of a low standard and responses to questions addressing AO1 Recalls Knowledge, indicates that there had been insufficient preparation for the theory exam.

Of those questions attempted, candidates generally performed well on an item relating to health & safety issues and a question asking for the identification of different types of arch. A couple of candidates were able to give correct solutions to the applied mathematical questions concerning binomial theorem and integral calculus.

Items related to Unit 308: Structural Mechanics were poorly answered, indicating that candidates either had not been prepared properly or they had yet to be taught the unit.

Items related to Unit 309: Civil Engineering Technology, with the exception of questions relating to health & safety, were answered with minimal understanding being shown.

Items related to Unit 311: Graphical Communication, including types of drawings, equipment used to complete drawings and BIM were presented with insufficient evidence.

Items related to Unit 320: Further Mathematics for the Built Environment included some correct solutions but most candidates were unable to clearly define mathematical terms or complete calculations correctly.

Centres need to prepare candidates appropriately for this exam. Units such as Structural Mechanics and Further Mathematics need to be taught appropriately and candidates need to give sufficient time to perform example calculations in preparation for the sitting of the exam.

Centres are advised to revisit current handbooks, test specifications and previous papers to fine-tune the delivery of their programmes.

Extended Response Question

The Extended Response Question was not answered well by most candidates. Candidates were unable to explain the term effective length, produced poor section details or did not comment on the structural considerations in the design of a concrete cast in situ frame. As commented above, all targeted structural mechanics items were weakly answered and this item performed, with its structural analysis elements, no differently than the specifically targeted items of the unit.

6720-556 Level 3 Constructing the Built Environment – Theory exam

Series 1 – June 2018 (Summer)

Compared to the March 2018 paper, the level of responses in this series showed a much better understanding by candidates of the range of units this pathway consists of. Candidates sitting this question paper generally performed well on items related to Civil Engineering Technology (including Health and Safety issues) and Graphical Communication items. Responses relating to the Further Mathematics unit were satisfactorily answered, with most candidates being able to demonstrate an ability to differentiate or integrate an expression. Many candidates were also able to find the centroidal axis of a tee section. Questions relating to normal distribution and contextualised questions involving measures of dispersions were poorly answered. This would suggest candidates struggled to apply mathematical concepts within a contextualised situation.

Questions that were answered well by candidates included the identification of; manual and computer based drawing techniques; temporary methods of ground water control; types of excavation plant; and the calculus related items. Explanation responses in relation to; BIM; a digital design office; use of a prefabricated steel portal frame; and SUDS were also well attempted. Questions relating to Structural Mechanics continued to be weakly answered although many learners were able to determine the centroidal axes of a beam and partially calculate the second moment of area question correctly.

Higher scoring candidates were able to give linked responses to the explanation of BIM; a digital design office; use of a prefabricated steel portal frame; and SUDS. These candidates often achieved mark band 2 scores for the extended response question.

Lower scoring candidates struggled with contextualised questions, often not relating their responses to the question stem or were unable to provide linked responses to identified issues. For example in question 11, candidates were unable to explain caissons or, in question 14, factors when designing a SUDS system. These candidates were also unable to complete correct structural mechanics solutions to determine for Q23 the centroidal axes or second moment of area of a beam. This suggests that they may have not been taught column design or framework methods but did not want to directly state this after the issues of the previous series with the same centre and cohort.

Extended Response Question

This question was overall satisfactorily answered by most candidates. There were also included a number of candidates who accessed Mark Band 2 for the Extended Response Question. Candidates were able to explain some aspects linked to the steel frame construction form and made some attempt at linking their responses to the structural considerations to be considered for the scenario set task.

Synoptic Assignments – Year 1

All Pathways

Grade Boundaries

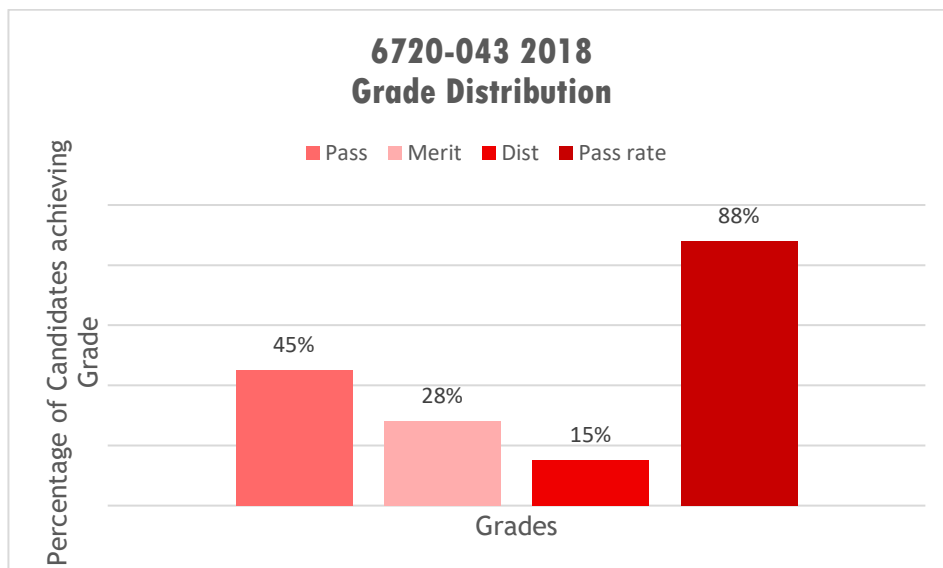
Below identifies the final grade boundaries for this assessment, as agreed by the awarding panel;

Assessment: 6720-043

Series: 2018

Total marks available	60
Pass mark	24
Merit mark	35
Distinction mark	46

The graph below shows the distributions of grades and pass rate for this assessment;



Principal Moderator Commentary

The assignment brief which was scenario based was appropriate for candidates to consider an approach to the tasks. The outcomes from the tasks were varied and demonstrate the amount of effort that candidates put in and in the amount of care taken in the presentation of their work.

A01 Recalls knowledge from across the breadth of the qualification

General recall was good throughout the assignment, for example, candidates could discuss materials that were appropriate in Task 1 and they considered the obvious risks when working at height in Task 2. Measuring and estimating was also good and most candidates could present the work in a logical sequence and could support their work with annotated sketches in Task 4.

A02 Demonstrates understanding of concepts, theories and processes from across the breadth of the qualification

The higher scoring assignments presented clients with reasoned arguments as to why materials had been chosen for the project and sometimes this could include comparisons with similar materials that would be competing on the market to fulfil the same purpose. This demonstrated analysis, application and evaluation and reflected candidates operating in the higher domains of a learning taxonomy. The higher scoring assignments could also demonstrate a knowledge of heat loss rather than some loosely quoted values for a specific material, which allowed candidates to demonstrate understanding, particularly in Task 1. Where candidates achieved higher marks, there was clear referencing, candidates used approved documents and were able to cover more than the basic points showing originality in their work, such as Task 2.

It was noted that some candidates failed to show their workings out when using calculations in their work. Centres are reminded that candidates should always show all workings out for any calculations given in their work.

A03 Demonstrates technical skills from across the breadth of the qualification

Work was variable for A03. Distinction level assignments included high quality annotated sketches that provided strong supporting evidence for A02, A04 and A05. In the lower scoring assignments, candidates were using incorrect hatchings and had no sense of scale and proportion in their sketching. Tutor's marking for this was accurate and very few amends were made to the scoring of the application of practical / technical skills. It was noted that some centres have had difficulty in copying pencil drawings to an electronic format to provide strong supporting evidence.

A04 Applies knowledge, understanding and skills from across the breadth of the qualification in an integrated and holistic way to achieve specified purposes.

Some candidates did not expand upon the risk assessment pro-forma provided by centres for the health and safety task, meaning they often only gave the most basic information required and did not reassess when control measures were in place in their report. Candidates tended to follow a style of formatting the work, which meant they missed opportunities to demonstrate originality in its presentation and had difficulty in demonstrating higher levels of understanding.

A05 Demonstrates perseverance in achieving high standards and attention to detail while showing an understanding of wider impact of their actions.

Where assignments failed to score high marks for this outcome, there was a general lack of depth to discussion, calculations lacked structure and drawings were not of a consistently high quality. Candidates need to be highly focused with attention to detail to provide a client centred outcome and to be able to provide a report that would be acceptable in the industry.

Synoptic Assignments – Year 2

Pathway 1 - Construction

Grade Boundaries

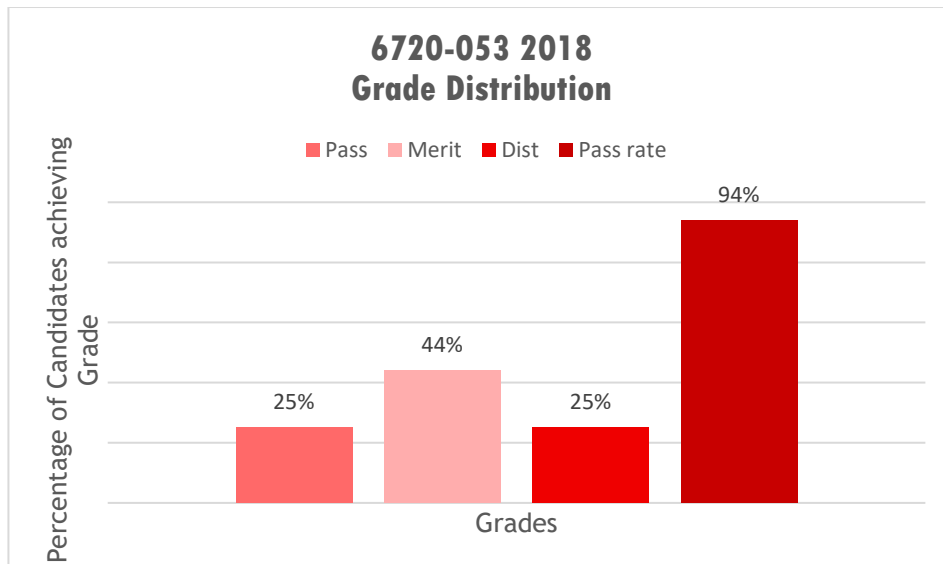
Below identifies the final grade boundaries for this assessment, as agreed by the awarding panel;

Assessment: 6720-053

Series: 2018

Total marks available	60
Pass mark	26
Merit mark	35
Distinction mark	45

The graph below shows the distributions of grades and pass rate for this assessment;



Principal Moderator Commentary

The assignment brief which was scenario based with images was appropriate for candidates in terms of what they should research and in providing direction for the tasks. The outcomes from the tasks were varied and tended to demonstrate the amount of effort that candidates put into the research and in the amount of care taken in the presentation of their work.

A01 Recalls knowledge from across the breadth of the qualification

General recall was good throughout the assignment. For example, candidates presented a range of activities and used appropriate trade technical terms.

A02 Demonstrates understanding of concepts, theories and processes from across the breadth of the qualification

The higher scoring marks, in addition to recalling terms and producing lists, provided accurate information relating to testing. Some candidates made the error of discussing the wrong concrete test for testing. Calculations were well presented and showed all working out and sketches supported text to provide an industry acceptable standard report for Task 3. Some of the notes on bending moments (Task 2) did not always show convincing evidence of the candidate understanding the subject. Many of the reports failed to highlight important issues in the demolition phase, with little understanding shown of difficulties surrounding cost incurred through removal and re-instatement of services. In the higher scoring assignments, candidates were able to demonstrate this understanding through supporting their arguments with researched data and structured calculations.

A03 Demonstrates technical skills from across the breadth of the qualification

Work was variable and in the higher scoring assignments, there was a good structure to the calculations and a good demonstration of the drawing skills required for Tasks 2, 3 & 4.

A04 Applies knowledge, understanding and skills from across the breadth of the qualification in an integrated and holistic way to achieve specified purposes.

The drawings are again key in bringing this assignment together and demonstrating clear causative links between theory and practice. Centre marking was good for this outcome.

A05 Demonstrates perseverance in achieving high standards and attention to detail while showing an understanding of wider impact of their actions.

The assignments with the higher marks had superior quality drawings which provided additional supporting evidence to attain higher marks and the reports were of an industry standard. The presentation was difficult to judge in terms of quality, as candidates tended to present too much information making wordiness unavoidable, but providing evidence against A02.

From the evidence submitted it is clear that the centres have interpreted the assignments appropriately and the majority of candidates have approached each task fully and have followed the assignment briefs. Centres are using a holistic approach to mark effectively and the marks moderated have been consistently within tolerance. The standard of assessment has been good and in many samples, the feedback sheets have been used well to provide candidates with useful feedback on their performance.

Pathway 3 - Civil Engineering

Grade Boundaries

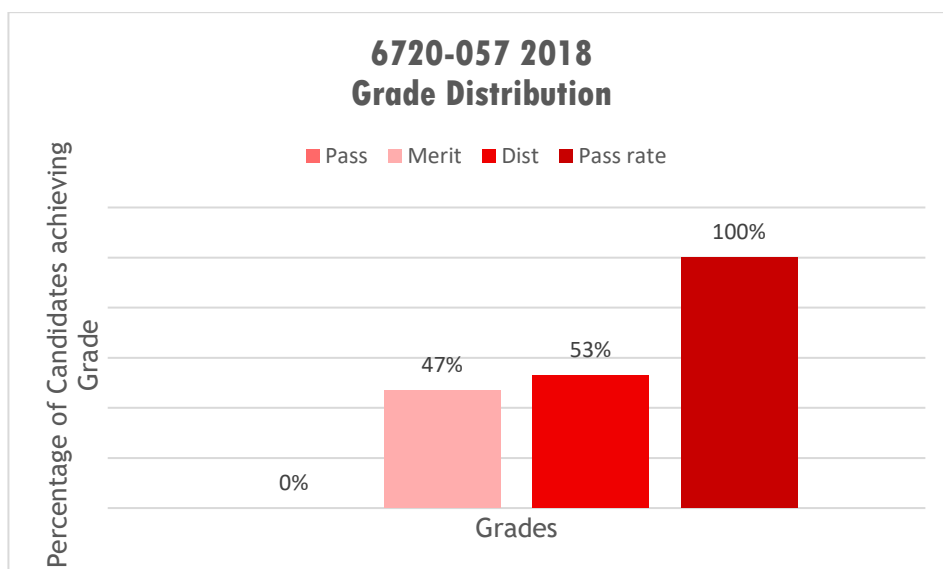
Below identifies the final grade boundaries for this assessment, as agreed by the awarding panel;

Assessment: 6720-057

Series: 2018

Total marks available	60
Pass mark	25
Merit mark	34
Distinction mark	44

The graph below shows the distributions of grades and pass rate for this assessment;



Principal Moderator Commentary

The assignment brief which was scenario based with images was appropriate for candidates in terms of what they should research and in providing direction for the tasks. The outcomes from the tasks were varied and tended to demonstrate the amount of effort that candidates put into the research and in the amount of care taken in the presentation of their work.

AO1 Recalls knowledge from across the breadth of the qualification

General recall was good throughout the assignment. For example, candidates could list terminology related to conservation.

AO2 Demonstrates understanding of concepts, theories and processes from across the breadth of the qualification

The higher scoring marks, in addition to recalling terms, provided accurate information relating to transporting, placing and compacting concrete. Calculations were well presented and showed all working out. Sketches supported text to provide an industry acceptable standard report for Task 3. Some of the notes on bending moments (Task 2) did not always show convincing evidence of the candidate understanding the subject. Many of the reports failed to highlight important issues in the demolition phase, with little understanding shown of difficulties surrounding cost incurred through removal and re-instatement of services. In the higher scoring assignments, candidates were better able to demonstrate this understanding through supporting their arguments with researched data and structured calculations.

AO3 Demonstrates technical skills from across the breadth of the qualification

Work was variable and in the higher scoring assignments, there was a good structure to the calculations and a good demonstration of the drawing skills required for Tasks 2, 3 & 4.

AO4 Applies knowledge, understanding and skills from across the breadth of the qualification in an integrated and holistic way to achieve specified purposes.

The drawings are again key in bringing this assignment together and demonstrating clear causative links between theory and practice. Centre marking was good for this outcome.

AO5 Demonstrates perseverance in achieving high standards and attention to detail while showing an understanding of wider impact of their actions.

The assignments with the higher marks had superior quality drawings which provided additional supporting evidence to attain higher marks and the reports were of industry standard. The presentation was difficult to judge in terms of quality, as candidates tended to present too much information, making wordiness unavoidable but providing evidence against AO2.

From the evidence submitted it is clear that the centres have interpreted the assignments appropriately and the majority of candidates have approached each task fully and have followed the assignment briefs. Centres are using a holistic approach to mark effectively and the marks moderated have been consistently within tolerance. The standard of assessment has been good and in many samples, the feedback sheets have been used well to provide candidates with useful feedback on their performance.