5220-32 Level 3 Advanced Technical Extended Diploma in Digital Technologies (720)

Pathways:

Application Development

System Infrastructure

2019

Qualification Report

Contents

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 2019 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

- Pathway 1
  - 5220-030/530 – Level 3 Digital Technologies – Theory exam
    - March 2019 (Spring)
    - June 2019 (Summer)
  - 5220-031 Level 3 Digital Technologies (360) – Synoptic Assignment

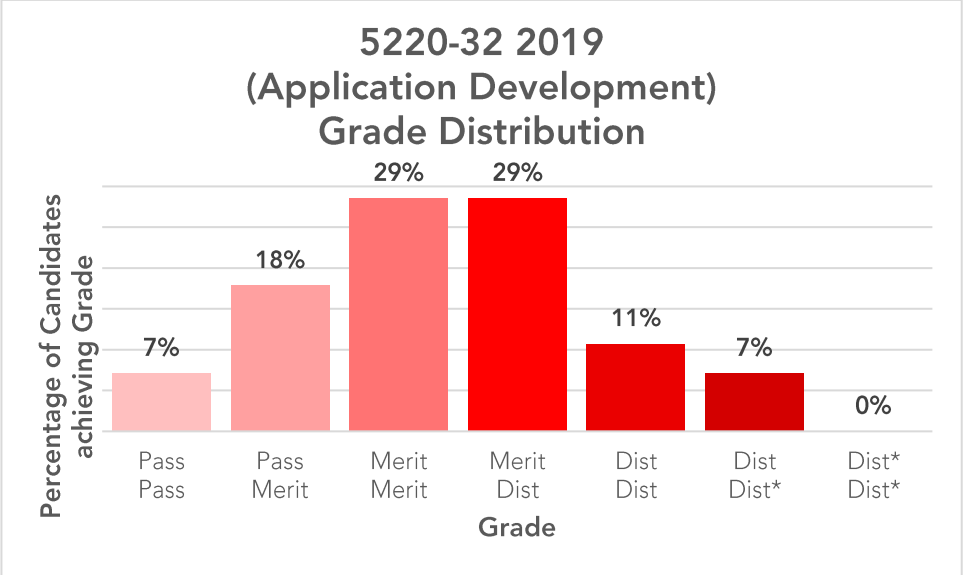
Year 2

- Pathway 1
  - 5220-035/535 Level 3 Digital Technologies (Application Development) – Theory exam
    - March 2019 (Spring)
    - June 2019 (Summer)
  - 5220-046 Level 3 Digital Technologies (Application Development) – Synoptic Assignment
- Pathway 2
  - 5220-036/536 Level 3 Digital Technologies (System Infrastructure) – Theory exam
    - March 2019 (Spring)
    - June 2019 (Summer)
  - 5220-039 Level 3 Digital Technologies (System Infrastructure) – Synoptic Assignment

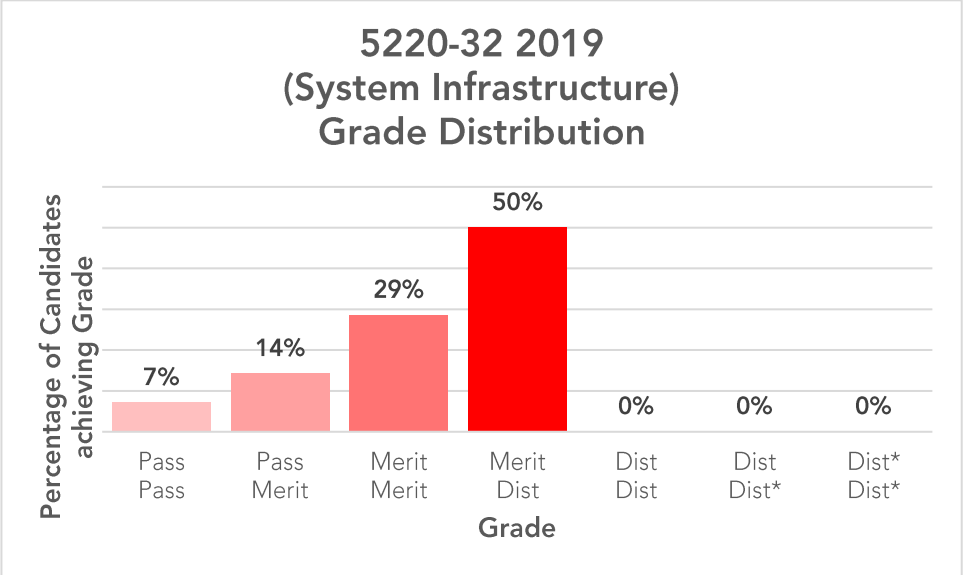
Qualification Grade Distribution

The grade distribution for this qualification is shown below:

5220-32 Level 3 Advanced Technical Extended Diploma in Digital Technologies (720) (Application development) – Pathway 1



5220-32 Level 3 Advanced Technical Extended Diploma in Digital Technologies (720) (System Infrastructure) – Pathway 2



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

5220-30 Level 3 Advanced Technical Certificate in Digital Technologies

Grade Boundaries

Assessment: 5220-030/530
Series: March 2019

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

Total marks available	80
Pass mark	33
Merit mark	44
Distinction mark	56

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

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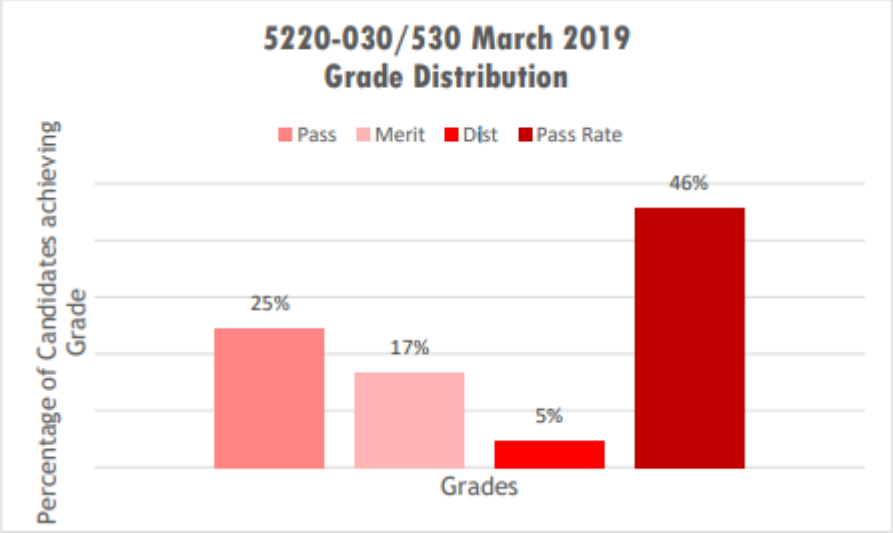
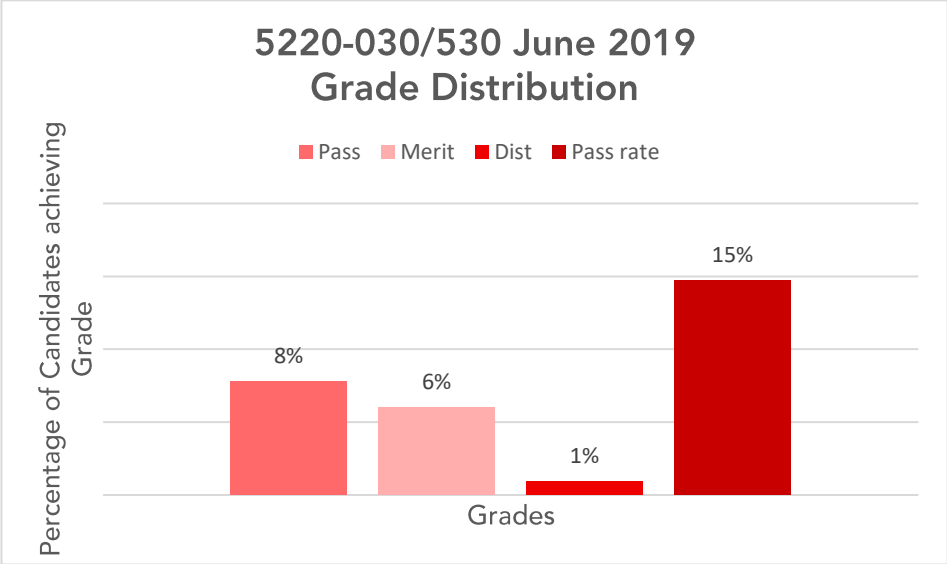


Assessment: 5220-030/530
Series: June 2019

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

Total marks available	80
Pass mark	33
Merit mark	44
Distinction mark	56

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



Chief Examiner Commentary

5220-030/530 Level 3 Digital Technologies - Theory exam

Series 1 – March 2019

Generally, the performance of candidates was disappointing given that the structure and pattern of the questions set against the core units of the course was identical to that of the previous year and candidates underperformed in some key areas. Many candidates appeared to lack sufficient preparation for the test.

Responses to questions set against AO1 covering Recall of Knowledge produced better marks than those set against AO2 and AO4 covering Understanding and Integration respectively.
It was clear that many candidates had revised well for the facts included in the scope of the test

Some candidates achieved good marks in questions set against the topics covered in Unit 301. The responses of candidates in questions dealing with security were reasonable, apart from the question dealing with access control.

Few candidates provided good responses in the other units in scope, 302, 303 and 305.

In questions set against AO2, many candidates lacked sufficient skills in the techniques required for questions demanding longer responses.
In networking questions, candidates often failed to provide sufficient depth to demonstrate the required degree of understanding. The recall of knowledge was much stronger than the level of understanding shown.

For software development questions, candidates demonstrated limited understanding of development models. There was a wide variance in the quality of responses to the question covering Object Oriented Programming with some excellent answers from a small minority of candidates but many poor answers for this topic. Few candidates provided good answers for the format of the Hexadecimal numbering system.

Some candidates appeared to lack a good strategy for the responses required for the extended response questions set against AO4. Only a small number used the scenario to address the topics of the question directly and very few provided sufficient explanation or discussion to reach the higher bands of marking. Once again, this pattern is similar to the outcomes of previous series of this test. Many candidates seemed to have a good strategy for how a good response is structured but did not apply this to the context given to a sufficient level to gain marks in the higher bands.

Some of the topics with poor levels of performance are consistent with those of previous series of this test. Most notably, these were Networking and the use of programming paradigms.

There were some significant gaps in the demonstration of understanding of core topics and these gaps have had a negative effect on overall performance. Only a minority of candidates have achieved grades higher than ‘Pass’.

Series 2 – June 2019

The performance of the cohort that sat this exam was generally similar to the first test in the academic year. Many candidates who sat this test underperformed in all Assessment Objectives.

Some candidates were confusing the command verbs of the questions. They gave full descriptions or justifications when a statement type response was required (AO1 questions) and provided more detail for which they would not be awarded additional marks. On the other hand, in questions where candidates are given the opportunity to demonstrate their deeper understanding of topics (AO2 questions) they often provided partial answers, failing to provide justification of their points and thus missed the opportunity to score full marks. Candidates would benefit from practising exam techniques. They need to be encouraged to spend time reading the questions thoroughly and consider the command verbs before attempting their answers.

The questions based on planning process life cycles and OSI models were generally answered well. However, a large majority of candidates demonstrated little knowledge in software development. Many candidates were not able to describe different types of software.

A few candidates failed to use generic industry terminology and used brand or product names instead.

Key areas of improvement for candidates would be in core networking technologies, information security, software development and the use of different types of software.

For the extended response questions, candidates' responses had insufficient depth and in many cases were factual lists of items. Whilst answers were mostly related to the scenario, they failed to justify advantages and disadvantages of the solutions offered for the topics (upgrade to a network and secure webpage). Some candidates provided either irrelevant answers or failed to provide an answer at all. Very few candidates achieved marks in the higher bands.

When responding to these questions, candidates should consider the scenario and should include a wide range of considerations, addressing the key points from the scenario. They should include clear justifications to demonstrate their knowledge and understanding from across the content.

Theory Exams – Year 2

5220-32 Level 3 Advanced Technical Extended Diploma in Digital Technologies (720) – Pathway 1

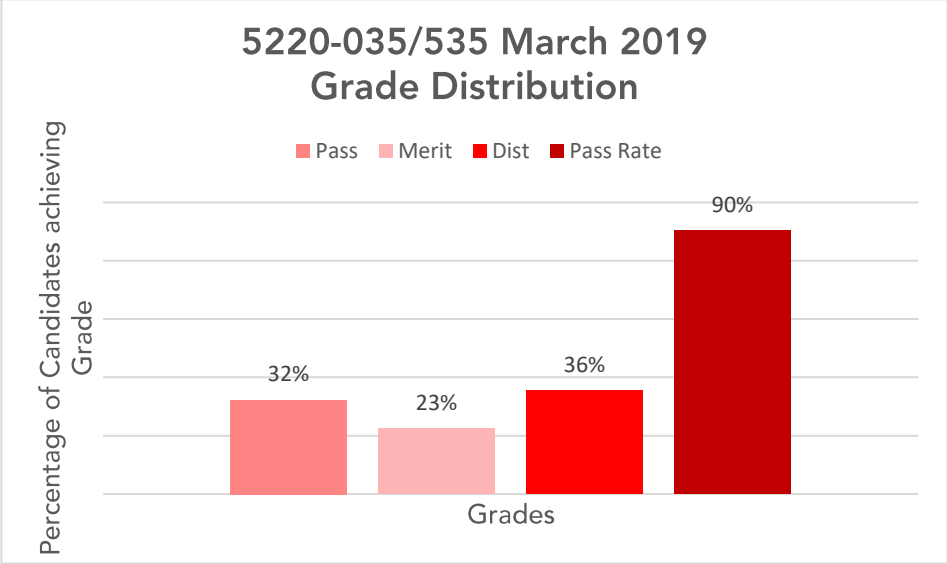
Grade Boundaries

Assessment: 5220-035/535
Series: March 2019 (Spring)

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

Total marks available	80
Pass mark	34
Merit mark	45
Distinction mark	57

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

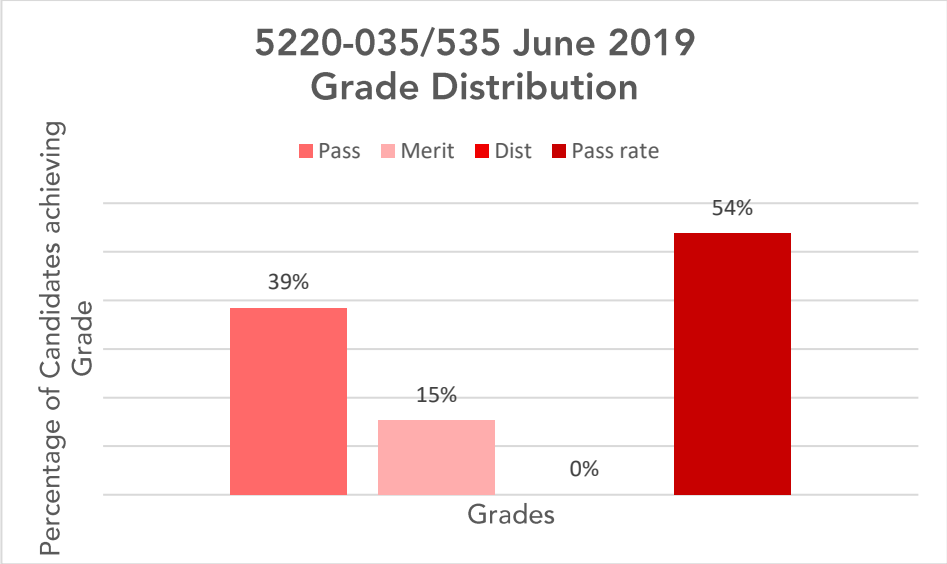


Assessment: 5220-035/535
Series: June 2019 (Summer)

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

Total marks available	80
Pass mark	34
Merit mark	45
Distinction mark	57

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



Chief Examiner Commentary

5220-035/535 Level 3 Advanced Technical Extended Diploma in Digital Technologies (720) (Application Development) - Theory exam

Series 1 – March 2019

The cohort for this test was small. Care should be taken when using this small dataset in comparison with other series where the entry was larger.

Many candidates performed well in this test, indicating that some centres had provided good preparation for the exam and had built on the candidates experience in the first year of the course of the style of test.

In many cases, candidates demonstrated very good technique in their answers. The range of technical language used was good and the terms used were accurate and relevant.

There were a few strong responses in the questions dealing with programming technique.

Many candidates were able to give effective explanations for the use of good practice in programming style and were able to offer good reasons for its use. They showed that they understood the value of well-formed code in the production of effective software.

Some candidates still failed to provide sufficient depth in the answers they gave to capitalise on the knowledge shown. They also failed to be effective in their answers by repeating the same point. A minority of candidates demonstrated this deficiency but the value of good teaching of technique cannot be underestimated.

The question dealing with logical checking to change program execution produced some poor responses.

There was a significant variation in the answers dealing with the concepts used in Object Oriented Programming. Some of the answers offered were excellent but others indicating little preparation or revision in this topic.

The responses to the Extended Response Question asking candidates to interpret a piece of pseudocode were strong and many candidates achieved marks in the higher bands. The technical language used was often accurate and relevant.

The second Extended Response Question produced some very good answers. The candidates who made use of the scenario to provide a framework for their answers scored best. It was clear that some centres had prepared candidates with a useful technique to address this type of question. Where this was the case, candidates provided logical and coherent answers.

Series 2 – June 2019

The cohort completing this test was small. The candidates performed statistically less well than in the first test this year.

The scope of the test is limited to two units focussing on the theories and practise of software development.

Candidates performed well in questions dealing with the themes of project design and planning, but slightly less well in questions dealing with specific aspects of programming. In some questions, such as those dealing with the handling of data in programming, some candidates identified data items rather than using generic industry terminology.

Candidates gave good responses in questions dealing with life cycles, but some failed to identify the structures used in algorithms.

Candidates performed quite well in questions where candidates are given the opportunity to demonstrate their deeper understanding of topics (AO2 questions), and most candidates attempted to provide an answer for each question. In line with other series on this test, some candidates gave partial answers to AO2 questions, but this was much less frequent than in responses seen in the first year of the course. Where the candidates failed to achieve marks, it was noted that this was because there was limited understanding of the topics.

With questions where candidates are given the opportunity to demonstrate their knowledge of topics (AO1 questions), candidates seemed to be making guesses, were uncertain and gave answers out of scope.

Candidates' understanding of the use of iterative constructs was very poor and very few gave complete answers to the question dealing with the benefits of pseudocode. There seemed to be partial understanding of how diagrams can be used in documentation, and there was some confusion relating to the terms 'usage' and 'target environment', with some candidates mis-identifying the response required.

For the extended response questions, candidates' responses had insufficient depth and in many cases provided only identification points. The first question required candidates to analyse an algorithm represented in pseudocode. Most candidates gained marks in the identification of the features of the code, but few were able to determine the overall purpose of the algorithm. The second extended response question required candidates to provide a discussion of how a problem posed in a scenario might be considered and resolved. Few candidates provided sufficient depth of understanding using explanation, discussion, analysis and justification in order to achieve marks in the higher bands.

When responding to these questions, candidates should consider the scenario and should include a wide range of considerations, addressing the key points from the scenario. They should include clear justifications to demonstrate their knowledge and understanding from across the content.

5220-32 Level 3 Advanced Technical Extended Diploma in Digital Technologies (720) – Pathway 2

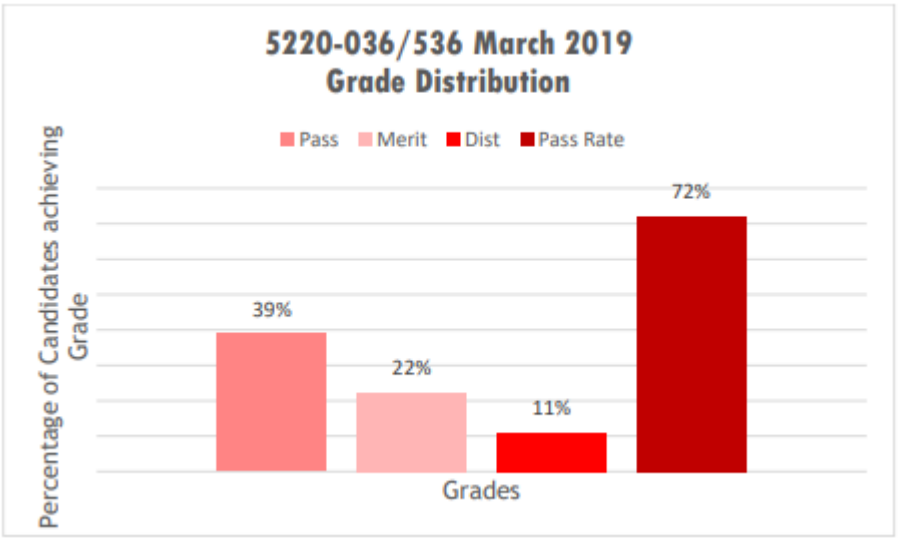
Grade Boundaries

Assessment: 5220-036/536
Series: March 2019 (Spring)

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

Total marks available	80
Pass mark	33
Merit mark	44
Distinction mark	56

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

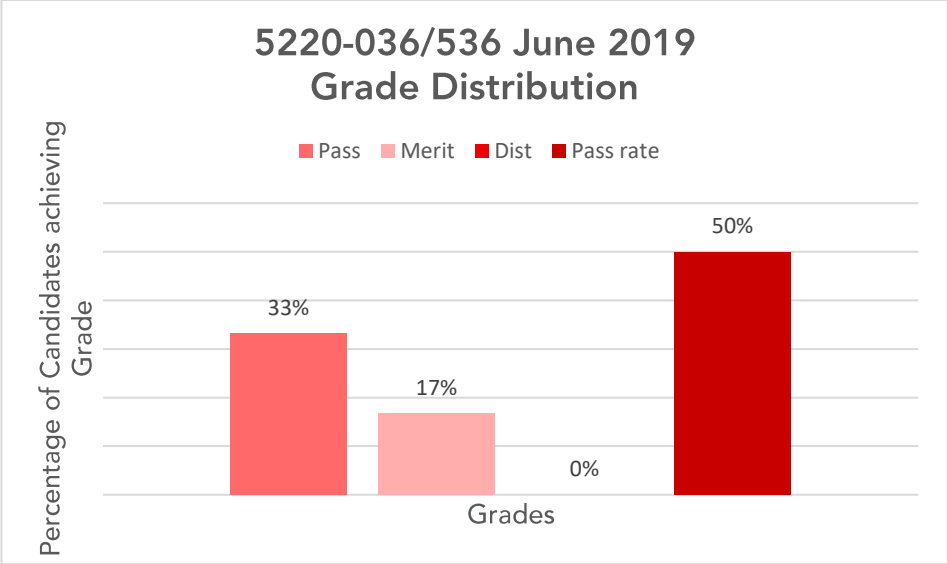


Assessment: 5220-036/536
Series: June 2019 (Summer)

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

Total marks available	80
Pass mark	33
Merit mark	44
Distinction mark	56

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



Chief Examiner Commentary

5220-036/536 Level 3 Advanced Technical Extended Diploma in Digital Technologies (720) (System Infrastructure) - Theory exam

Series 1 – March 2019

The performance of candidates in this paper were generally very good. The cohort was very small, and it was apparent that they had been very well prepared for the range of topics covered in the online theory exam, and in the skills needed to provide appropriate answers to questions covering various assessment objectives.

In questions where candidates were asked to recall knowledge, the candidates provided good answers, except in the area of infrastructure management roles. Their answers were brief and appropriate.

Generally, candidates were able to give good explanations and descriptions, especially in cases where a requirement to explain a topic followed a question asking them to recall facts about that topic.

Responses to extended questions were generally good, with some being very good. This indicated that the centre had put in place provision for teaching candidates how to answer questions as well as what to provide in their answers.

The importance of a candidate's ability to use effective strategies in answering questions in order to achieve good marks in an online examination cannot be overstated. Candidates using effective techniques are able to maximise their opportunities to earn marks through the range and depth of the answers they give.

There was some deficit in understanding of authentication methods, and threats caused by the use of 'trap doors', where candidate answers were seen to be weaker.

In extended questions against AO4, technique should be augmented by the use of a useful structure in an answer that is logically structured and clearly uses higher-order thinking skills through effective discussion and analysis. This offers candidates the chance to score well in this AO.

The cohort completing this test was very small. The candidates performed statistically less well than in the first test this year.

With a very few exceptions, the candidates were well prepared for the test.

In questions where candidates were given the opportunity to demonstrate their knowledge (AO1 questions), responses were generally very good.

In questions where candidates are given the opportunity to demonstrate their deeper understanding of topics (AO2 questions), most candidates made an attempt to provide and answer and these were reasonably well constructed. The candidates seemed to have benefited from their test experience in the first year of the course and had developed a strategy for providing useful responses.

Fewer candidates achieved the higher-grade bands in this series in comparison to the previous series.

Key areas of improvement for candidates would be in defence measures, trend analysis and distributed computing architecture.

For the extended response questions tackling connection to external networks and cloud-based service, candidates' responses had insufficient depth that allowed marks to be awarded in the higher bands.

When responding to these questions, candidates should consider the scenario and should include a wide range of considerations, addressing the key points from the scenario which are then validated through explanation, and finally justified through critical argument.

Synoptic Assignments – Year 1

5220-30 Level 3 Advanced Technical Certificate in Digital Technologies (360)

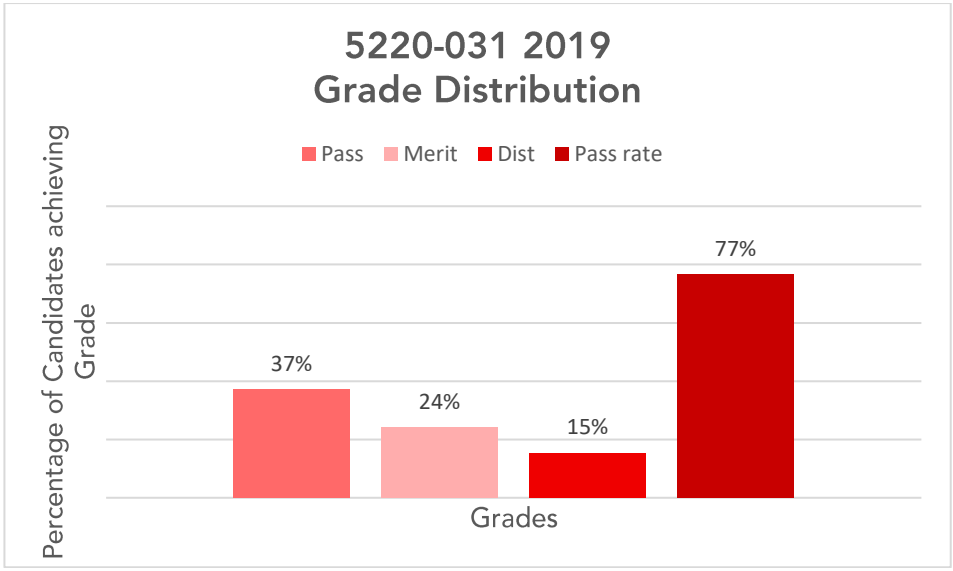
Grade Boundaries

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

Assessment: 5220-031
Series: 2019

Total marks available	60
Pass mark	24
Merit mark	34
Distinction mark	44

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



Principal Moderator Commentary

This was a large cohort but quite a large number of candidates failed to submit any evidence, but the remaining substantial sample allowed moderation to be completed. In the great majority of cases, evidence was uploaded in good time. Where centres fell short of expectations, it was often if the completion and submission of the administration documents relating to observation of tasks and standardisation of the markers.

The centres uploaded most evidence required for the moderation processes to be carried out successfully. However, in a few cases, the names given to the files uploaded were confusing, making it difficult to relate the evidence to particular tasks in the assignment.

The candidate evidence was effective and allowed moderation of centre awarded marks. The candidate reports were effective in the presentation of evidence of having completed the required tasks across the range of the synoptic assessment.

A range of development strategies was used by centres to create the software solution. In the best examples of the development processes, the planning, implementation, testing and review were well planned and executed systematically.

Performance against AO1, Knowledge and recall, was demonstrated in higher scoring candidates through use of accurate and appropriate technical language. Lower scoring candidates used more general terms in their planning and written work. Centres should focus on the acquisition of the language terms outlined in the unit specifications.

Understanding, addressed in AO2, was seen where the naming conventions on files were appropriate and consistent across the cohort in most cases. In the best work, code was well-formed, correctly commented and used consistent naming styles using Camel and Pascal casing. In poorer examples of development, the naming conventions were not applied consistently and the planning for, and implantation of testing techniques was limited. In some very basic examples of code, the algorithms used were inefficient and failed to provide any error trapping or handling.

Many candidates demonstrated their skill, as set in AO3, in programming through the use of well-structured programs. Algorithms were efficient and the maintainability was improved through effective separation of concerns using modularised code. Candidates produced accurate design diagrams in the better submissions. Centres should focus on the requirements of industrial standards seen in the better submissions. Candidates should name well, be efficient in their code and separate code concerns where appropriate.

Higher scoring candidates had made good use of annotated images, drawings and diagrams in their design and planning, and had referred to them in their writing using the generated caption number generated by the word processor; this clearly indicated attention to detail as required by AO5. Good submissions had clear evidence of planning in advance of the creation of content, giving clear indication of addressing the needs of AO4 where the task requirements are integrated.

Some candidates failed to provide sufficient depth in their written answers and therefore failed to achieve high marks in the assessment objectives where discursive skills and analysis were required, particularly AO4 and AO5. However, in some cases, the answers were thoughtful and comprehensive, with suitable recommendations made to the ‘client’, addressing the requirements from the brief.

The quality of the review of the project was variable. Some excellent submissions had a clearly planned structure and were reflective in their content. The use of analysis in these better submissions allowed candidates to strengthen their marks in assessment objectives that required precision and a good sense of the synoptic nature of the project. The impact of the quality of the review was most relevant to AOs 2, 4 and 5.

In general, the candidates produced good work and it was evident that centres had implemented a planning structure that allowed all candidates to attempt all of the required tasks in a timely manner.

Centres should encourage candidates to approach the whole lifecycle of software development so that they can gain marks in those areas where they are stronger so that the effect of weaker areas is mitigated.

Synoptic Assignments – Year 2

5220-32 Level 3 Advanced Technical Diploma in Digital Technologies (720) (Application Development) – Pathway 1

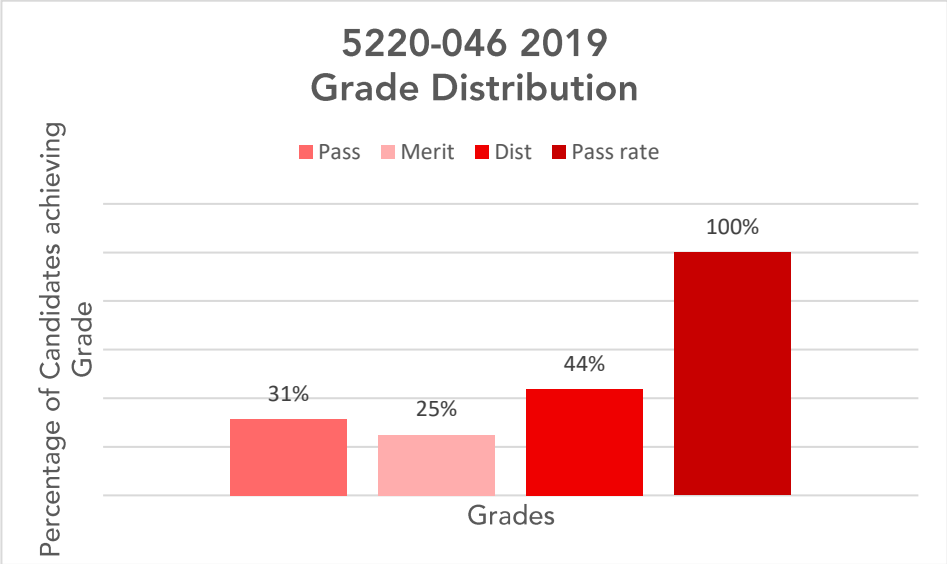
Grade Boundaries

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

Assessment: 5220-046
Series: 2019

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

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



Principal Moderator Commentary

This was a cohort of 33 candidates and only one candidate failed to submit work.

In general, the candidates produced good work and it was evident that the centres had implemented a planning structure that allowed all candidates to attempt all the required tasks in a timely manner. The use of paper by some centres in order to provide all the detail required to examiners and moderators was very poor.

Strengths

Generally, required documents were uploaded within requested timescales. The candidate evidence was effective and allowed moderation of centre awarded marks. The candidate reports were effective in the presentation of evidence of having completed the required tasks across the range of the synoptic assessment.

Higher scoring candidates demonstrated clear recall and knowledge (AO1) through the use of accurate and contextually correct technical terms. They demonstrated understanding (AO2) in the use of these items in the practical tasks and in the explanations included in design and review documents.

Naming conventions on files were appropriate and consistent across the cohort. In the best pieces of work the code was of a professional standard, demonstrating attention to detail (AO5) and an integrated approach through the use of related classes and objects (AO4). A range of approaches were used to produce the solution, with both being effective in producing a working application.

Where better submissions were seen, candidates had made good use of annotated images, drawings and diagrams and had referred to them in their writing. In the best work, the documentation was very well prepared and demonstrated a systematic and logical approach to the development processes. Such attention to detail earned high marks in AO5 and supported judgements made on AO2, understanding.

Weaknesses

The naming of files used for moderation evidence was inconsistent in one centre, making it difficult to relate the evidence submitted to the tasks to which it related. Such lack of attention hindered the marks earned against AO5.

The area of work that should be developed in the candidates' processes relates to the provision of a robust testing regime. Planning documentation should include a Test Plan, indicating the intended tests that will be carried out. The technical documentation should include the Test Log, showing all the tests that were actually carried out. The rigorous testing of a program can contribute strongly to marks earned against AO4. These should include all the items in the Plan, and any additional tests identified during the development processes.

A few candidates failed to provide sufficient depth in their answers and therefore failed to achieve high marks in the assessment objectives where discursive skills and analysis were required, mainly in the review processes. This was particularly relevant in AOs 2, 4 and 5.

5220-32 Level 3 Advanced Technical Diploma in Digital Technologies (720) (System Infrastructure) – Pathway 2

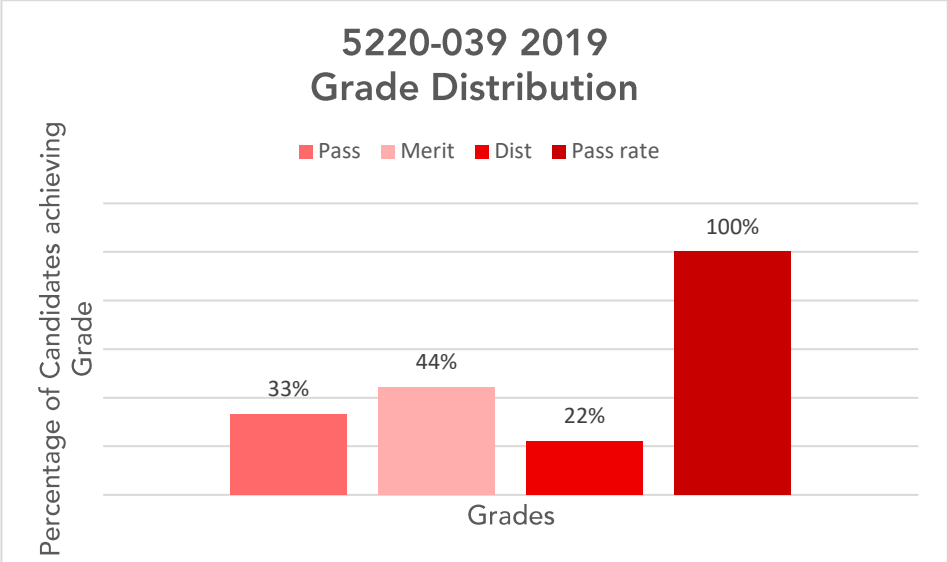
Grade Boundaries

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

Assessment: 5220-039
Series: 2019

Total marks available	60
Pass mark	24
Merit mark	34
Distinction mark	44

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



Principal Moderator Commentary

This was a small cohort, of sufficient size to allow effective moderation to take place. There was a broad range of marks across all the grades. The evidence was uploaded in good time and the sample submitted was entirely in line with the requirements.

The evidence provided by candidates was effective and allowed moderation of centre awarded marks.

The use of the candidate record form was highly effective, and a good depth of tutor commentary was provided. Clear justifications of the marks awarded in each assessment objective were given and the evidence suggests that the centre staff had received sufficient training in the use of the documentation and the evidence portal.

Strengths

Only one entered candidate failed to submit work showing the ability to retain the cohort throughout the course. The observation forms were used to provide effective confirmation of the completion of the practical tasks which have a significant importance in this qualification.

Higher scoring candidates made effective use of accurate technical terms, demonstrating good knowledge (AO1) and understanding (AO2). A few candidates made references to the protocols and models associated with the networking technologies used to produce complete working systems supporting judgements made against AOs 1, 2, 4 and 5.

In general, the candidates displayed a good level of skills in practical and written tasks, contributing to marks against AO3. The candidate reports were effective in the presentation of evidence of having completed the required tasks across the range of the synoptic assessment.

The types of tasks set meant that photographic evidence was particularly useful in demonstrating the work done by the candidates. The use of the images was effective in most cases, and the higher scoring candidates referred to them in their text, helping to support marks against AO4. The use of headings and section separators in written work allowed the reader to follow the structure easily.

Higher scoring candidates had adopted a reflective style and made good use of analysis to consider benefits and drawbacks, and the relation of these to the scenario in the brief. Some reports produced were very brief and poorly presented. Where the best work was seen, the marks awarded against AOs 4 and 5 were strengthened.

The observation forms were well used by the staff marking the work. Where candidates had made errors and corrected them, this was recorded by the tutor. Good use of the allowed time was evident in the planning of the tasks to be completed.

Weaknesses

The naming of files submitted was occasionally inconsistent, but the issues were quickly resolved with the help of the highly-effective centre contacts. A few images lacked quality and were difficult to interpret. Centres should check the quality of images before work is uploaded for moderation.

In a few cases, candidates had missed opportunities to provide analysis where there selected processes could have been compared to other possible approaches. This had a potentially limiting effect on judgements against AOs 2, 4 and 5.