

**Level 3 Advanced Technical
Extended Diploma in Digital
Technologies (720) (5220-32)
Level 3 Digital Technologies
5220-040 / 5220-540
(Business Analysis)**

November 2017 Version 1.0

Guide to the examination

Who is this document for?

This document has been produced for centres who offer

This document has been produced for centres who offer **City & Guilds Level 3 Advanced Technical Extended Diploma in Digital Technologies (720) (5220-32)**. It gives all of the essential details of the qualification's external assessment (exam) arrangements and has been produced to support the preparation of candidates to take the exam/s.

The document comprises four sections:

1. **Details of the exam.** This section gives details of the structure, length and timing of the exam.
2. **Content assessed by the exam.** This section gives a summary of the content that will be covered in each exam and information of how marks are allocated to the content.
3. **Guidance.** This section gives guidance on the language of the exam, the types of questions included and examples of these, and links to further resources to support teaching and exam preparation.
4. **Further information.** This section lists other sources of information about this qualification and City & Guilds Technical Qualifications.

1. Details of the exam

External assessment

City & Guilds Technical qualifications have been developed to meet national policy changes designed to raise the rigour and robustness of vocational qualifications. These changes are being made to ensure our qualifications can meet the needs of employers and Higher Education. One of these changes is for the qualifications to have an increased emphasis on external assessment. This is why you will see an external exam in each of our Technical qualifications.

An external assessment is an assessment that is set and/or marked by the awarding organisation (ie externally). All City and Guilds Technical qualifications include an externally set and marked exam. This must be taken at the same time by all candidates who are registered on a particular qualification. We produce an exam timetable each year. This specifies the date and time of the exam so you can plan your delivery, revision and room bookings/PC allocation in plenty of time.

The purpose of this exam is to provide assurance that all candidates achieving the qualification have gained sufficient knowledge and understanding from their programme of study and that they can independently recall and draw their knowledge and understanding together in an integrated way. Whilst this may not be new to you, it is essential that your learners are well prepared and that they have time to revise, reflect and prepare for these exams. We have produced a Teaching, Learning, and Assessment guide that is you should refer to alongside the present document ([Teaching, Learning and Assessment Guide](#)). If a learner does not pass the exam at their first attempt, there is only one opportunity to resit the exam, so preparation is essential.

Exam requirements of this qualification

This qualification has **one** pathway. This pathway is assessed by the following examination:

- **Level 3 in Digital Technologies (040/540) (Business Analysis)** – Theory exam (2) (2 hours and 30 minutes).

The exam is graded and a candidate must achieve at least a Pass grade in order to be awarded the qualification. (In addition to the exam, a synoptic assignment must also be completed and passed. You can find full details of the synoptic assignment in the *Qualification Handbook* and the *Synoptic Assessment Guide* -please see the links at the end of this document).

When does the exam take place?

The exam is offered on two fixed dates in March and June. The exact dates will be published at the start of the academic year in the *Assessments and Exam Timetable*
<http://www.cityandguilds.com/delivering-our-qualifications/exams-and-admin>

At the start of the programme of study for each of the two years, in order to effectively plan teaching and exam preparation, centres should know when the exam will be taking place and allocate teaching time accordingly. Section 2 of this document gives a summary of the content that needs to be covered in order to prepare learners for the exam and full details of this are given in the *Qualification Handbook*.

Form of exam

The exam for this qualification can be taken either on paper or online.

Can candidates resit the exam?

Candidates who have failed an exam or wish to retake it in an attempt to improve their grade, can do so twice. The third and final retake opportunity applies to Level 3 only. The best result will count towards the final qualification. If the candidate fails the exam three times then they will fail the qualification.

How the exam is structured

Each exam has a total of **80 marks** available.

Each exam is made up of:

- Approximately 10-12 short answer questions;
- 1-2 extended response questions.

Short answer questions are used to confirm **breadth of knowledge and understanding**.

The extended response questions are to allow candidates to demonstrate **higher level and integrated understanding** through written discussion, analysis and evaluation. These questions also ensure the exam can differentiate between those learners who are 'just able' and those who are higher achieving.

More details about and examples of question types are given in Section 3 of this document.

Assessment Objectives

The exams are based on the following set of assessment objectives (AOs). These are designed to allow the candidate's responses to be assessed across the following three categories of performance:

- **Recollection** of knowledge.
- **Understanding** of concepts, theories and processes.
- **Integrated application** of knowledge and understanding.

In full, the assessment objectives covered by the exam for this qualification are:

Assessment objective	Mark allocation (approx %)
<i>The candidate..</i>	
AO1 Recalls knowledge from across the breadth of the qualification	20%
AO2 Demonstrates understanding of concepts, theories and processes from a range of learning outcomes.	57.5%
AO4 Applies knowledge, understanding and skills from across the breadth of the qualification in an integrated and holistic way to achieve specified purposes.	22.5%

Booking and taking the exam

All assessments for City & Guilds Technical Exams must be booked through Walled Garden. There is a deadline for booking exams, synoptic assessments and any other centre marked assessments, please refer to the time line to check these dates.

The exam must be taken under the supervision of an invigilator who is responsible for ensuring that it is conducted under controlled conditions. Full details of the conditions under which the exam must be taken can be found in the Joint Council for Qualifications (JCQ) document, [*Instructions for Conducting Examinations \(ICE\)*](#).

Special consideration

Candidates who are unable to sit the exam owing to temporary injury, illness or other indisposition at the scheduled time may qualify for special consideration. This is a post-examination adjustment that can, in certain circumstances, be made to a candidate's final grade. The Joint Council for Qualifications' guide to the special consideration process can be found at www.jcq.org.uk.

To make a request for special consideration, please contact: policy@cityandguilds.com

Access arrangements

Access arrangements are arrangements that allow candidates with particular requirements, disabilities or temporary illness to take assessments, where appropriate, using their normal way of working. The Joint Council for Qualifications document, *Access Arrangements and Reasonable Adjustments* gives full details and can be downloaded [here](#).

For further information and to apply for access arrangements please see:

[Access arrangements - When and how applications need to be made to City & Guilds](#)
[Applying for access arrangements on the Walled Garden](#)

2. Content assessed by the exam

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

The exam assesses:

- **Unit 348: Systems analysis**
- **Unit 349: Financial modelling**
- **Unit 350: Business continuity**
- **Unit 351: Data driven solutions**
- **Unit 352: Change management**
- **Unit 353: Databases**

Each exam assesses a sample of the content of these units. This means that a single exam will **not** cover 100% of the unit content. The full range of content will be assessed over a number of examination series. Details of the coverage of a particular exam paper will **not** be released in advance of the exam itself. Centres should **not** make assumptions about what will be assessed by a particular exam based on what has been covered on previous occasions. In order to be fully prepared for the exam, learners **must** be ready to answer questions on **any** of the content outlined below.

The table below provides an overview of how the qualification's Learning Outcomes are covered by each exam and the number of **marks** available per Learning Outcome (ie **not** the number of *questions* per Learning Outcome). In preparing candidates for the exam, we recommend that centres take note of the number of marks allocated to Learning Outcomes and to assign teaching and preparation time accordingly.

In preparing candidates for the exam, centres should refer to the Qualification Handbook which gives full details of each Learning Outcome.

The following is a summary of only that qualification content which is assessed by the exam and **not** a summary of the full content of the qualification.

Unit	Learning outcome	Topics	Number of marks
348 Systems analysis	LO1 Understand the Principles of Systems Analysis and design	1.1 What is systems analysis and design? 1.2 Life Cycle Models 1.3 Compare and Contrast Life Cycle Models 1.4 Drivers for Systems Change 1.5 Benefits of Structured Analysis	12 marks
	LO2 Analyse Business Systems	2.1 Purpose of feasibility	

		2.2 Investigative Techniques 2.3 Feasibility Criteria 2.4 Develop Requirements Specifications	
	LO3 Design business systems	3.1 Design tools 3.2 Developmental tools	
349 Financial Modelling	LO1 Sources of money	1.1 Sources of money 1.2 Capital in an organisation 1.3 Loans to a company 1.4 Sources of income	
	LO2 Plan for spending during the product life-cycle	2.1 Research and design costs 2.2 Prototyping costs 2.3 Manufacturing costs 2.4 Marketing costs	9 marks
	LO3 Identify financial control systems	3.1 Management accounting 3.2 Financial accounting 3.3 Stock control 3.4 Auditing	
	LO4 Apply the principles of financial modelling	4.1 Product development costs 4.2 Product development planning	
350 Business continuity	LO1 Identify business continuity management (BCM) principles	1.1 Definitions and concepts 1.2 Legislation and frameworks 1.3 Essential organisational components 1.4 Identify critical resources	
	LO2 Describe processes of risk identification	2.1 Risks and hazards, and inherent risk 2.2 Likelihood and impact	12 marks

		2.3 Decide actions	
	LO3 Identify business continuity strategies	3.1 Contingency planning 3.2 BCM Response	
	LO4 Apply the principles of BCM	4.1 Initial analysis 4.2 Risk assessment 4.3 Contingency and Response plan	
351 Data driven solutions	LO1 Identify fundamental aspects of data mining	1.1 Data gathering 1.2 Data and Information Management 1.3 Machine learning 1.4 Reporting	
	LO2 Consider approaches to data analysis	2.1 Statistics and modelling 2.2 Predicting and inferring 2.3 Clustering data 2.4 Risk assessment	12 marks
	LO3 Identify options for data storage	3.1 Local storage 3.2 Cloud storage 3.3 Data transmission 3.4 Backup strategies	
	LO4 Apply the principles considered in a case study	4.1 Data gathering strategies 4.2 Data analysis and reporting	
352 Change management	LO1 Understand Change in an Organisational Context	1.1 Reasons for Organisational Change 1.2 Factors Hindering Successful Change	

	LO2 Understand Common Theoretical Models of Change Management	2.1 The ADKAR model 2.2 Lewin's Change Management Model 2.3 Casual Change Management Model 2.4 The 7S Framework 2.5 The Oakland and Tanner Model 2.6 Compare the Change Management Models 2.7 Step change	9 marks
	LO3 Planning for Organisational Change	3.1 Change Management Theoretical Models within Organisational Contexts 3.2 Change Management proposal	
353 Databases	LO1 Understand database terminology	1.1 Entities, relationships and attributes in relational databases 1.2 Database relationships	
	LO2 Design relational databases	2.1 Design relational databases 2.2 Document database designs	8 marks
	LO3 Create relational relational databases	3.1 Create relational databases 3.2 Populate relational databases 3.3 Manipulate data in relational databases 3.4 Test relational databases	
		Total marks for sections:	62 marks
		Integration across units*:	18 marks
		Total marks for exam: 80 Marks	

* *Integration across units.* These marks relate to Assessment Objective 4). These marks are awarded to differentiate between levels of performance by candidates taking the exam. The marks are given for how well a candidate has applied their knowledge, understanding and skills from across the units that make up the qualification in an integrated way to meet the requirements of the exam questions.

3. Guidance

Vocabulary of the exam: use of 'command' verbs

The exam questions are written using 'command' verbs. These are used to communicate to the candidate the type of answer required. Candidates should be familiarised with these as part of their exam preparation.

The following guidance has been produced on the main command verbs used in City & Guilds Technicals exams.

A more detailed version of this table, which also includes the command verbs used in the assignments is published in *City & Guilds Technical Qualifications Teaching, Learning and Assessment* guide.

Command verb	Explanation and guidance
Analyse	Study or examine a complex issue, subject, event, etc in detail to explain and interpret, elements, causes, characteristics etc
Calculate	Work out the answer to a problem using mathematical operations
Compare (...and contrast) (or describe the similarities/differences)	Consider and describe the similarities (and differences) between two or more features, systems, ideas, etc
Define	Give the meaning of, technical vocabulary, terms, etc.
Describe	Give a detailed written account of a system, feature, etc (..the effect of...on...) the impact, change that has resulted from a cause, event, etc (..the process..) give the steps, stages, etc
Differentiate between	Establish and relate the characteristic differences between two or more things, concepts, etc
Discuss	Talk/write about a topic in detail, considering the different issues, ideas, opinions related to it
Distinguish between	Recognise and describe the characteristic differences between two things, or make one thing seem different from another
Evaluate	Analyse and describe the success, quality, benefits, value, etc (of an end product, outcome, etc)
Explain	Make (a situation, idea, process, etc) clear or easier to understand by giving details, (..how..) Give the stages or steps, etc in a process, including relationships, connections, etc between these and causes and effects.
Give example(s) illustrate/	Use examples or images to support, clarify or demonstrate, an explanation, argument, theory, etc

Give a rationale	Provide a reason/reasons/basis for actions, decisions, beliefs, etc
Identify	Recognise a feature, usually from a document, image, etc and state what it is
Justify	Give reasons for, make a case for, account for, etc decisions, actions, conclusions, etc, in order to demonstrate why they suitable for or correct or meet the particular circumstances, context
Label	Add names or descriptions, indicating their positions, on an image, drawing, diagram, etc
List	Give as many answers, examples, etc as the question indicates (candidates are not required to write in full sentences)
Name	Give the (technical) name of something
Propose	Present a plan, strategy, etc (for consideration, discussion, acceptance, action, etc).
Select	choose the best, most suitable, etc, by making careful decisions
State	Give the answer, clearly and definitely
Summarise	Give a brief statement of the main points (of something)

Question types

The following explains, and gives examples of, types of questions used in City & Guilds Technical exams. In preparing candidates to take the exam, it is recommended that you familiarise them with the requirements of each question type so that they can be effective and make best use of the time available when sitting the exam.

- An effective candidate will gauge the type and length of response required from the question and the number of marks available (which is given for each question on the exam paper).
- Short answer questions may not require candidates to write in complete sentences. Extended response questions will require a more developed response.
- Candidates should read the exam paper before attempting to answer the questions and should allocate time proportionate to the number of marks available for each question or section.

Question type:

Short answer questions (restricted response)

These are questions which require candidates to give a brief and concise written response. The number of marks available will correspond to the number of pieces of information/examples and the length of response required by the question.

Example question:

Mark scheme:

Identify **four** steps that must be carried out when creating a risk assessment matrix.

(4 marks)

Answer

Any of the following or any other reasonable answer

- Identify the Risk (1)
- List the likelihood of the risk occurring (1)
- List possible actions / arrangements that may reduce the impact (1)
- Assign a likelihood score (1)
- Plot the risk in the matrix (1)

One mark for each step identified, maximum of four marks.

Test spec reference: 350 2.2

Total marks: 4

Question type:

Structured Response Questions

These are questions that have more than one part (eg a), b), etc.). The overall question is made up of linked, short answer questions which move the candidate through the topic in a structured way. For example, the question will usually start with a 'recall'/'state'/'describe' question followed by an 'explain' to draw out understanding of the topic. They usually have a shared introductory 'stem', and the number of marks may increase through the question.

Example question:

Mark scheme:

- a) Identify **three** features of Prosci's ADKAR theoretical model of Organisational Change. (3 marks)
- b) For **each** of the **three** features identified in Question a), explain how they would relate to a medium sized organisation attempting to move from paper-based to digital record keeping. (6 marks)

Answer:

a) Accept any of the following or any other reasonable answer

- A - Awareness (1)
- D – Desire (1)
- K – Knowledge (1)
- A - Ability (1)
- R – Reinforcement (1)

One mark for each feature identified, maximum of three marks.

Answer:

b) Accept any of the following or any other reasonable answer

- A - Awareness of the need for change (1) where all the individuals or teams in the organisation recognise the efficiencies that would come from the change to digital record keeping (1).
- D – Desire to participate and support the change (1) because in this case it may make working life easier (1): eg not spending time chasing up lost paperwork.
- K – Knowledge on how to change (1) where individuals (or teams) understand the part they have to play to make the change successful (1).
- A - Ability to implement the required skills and behaviours (1) where the difference between theory and practice is understood and support is put in place to assist the individual in making the change (1).
- R – Reinforcement to sustain the change (1) where systems are put in place to support individuals through rewards, performance recognition or taking corrective actions (1).

Two marks for each explanation, maximum of six marks.

Test spec reference: 352 2.1

Total marks: 9

Question type:

Extended response questions

Extended response questions are those that require the candidate to write a longer written response using sentences and paragraphs. These usually require candidates to discuss, explain, etc. a topic in some detail. The question is often based on a short case study, scenario or other prompt. The level of detail should be gauged from the question and the number of marks available.

Example question:

Mark scheme:

A small marketing business has been gradually expanding and they are no longer able to manage and process the volume of data they currently have. The business relies on the ability to see features and patterns within the data in order to effectively target the marketing for any of their clients.

Discuss the considerations to be taken into account when providing a solution to this problem, as well as how any change(s) imposed by the solution may be effectively and sensitively managed.

(9 marks)

Answer

Indicative content

- Available technologies
- Data integrity and security
- Data gathering and Storage
- Business continuity
- Backup Strategies
- Change management methodologies
- Reasons for change
- Overcoming resistance to change

0 – No awardable material

Band 1:**1– 3 marks**

The response demonstrates a limited understanding of the processes and technologies involved and is mostly a statement of facts which are not developed. The approach to the task is inconsistent. Statements may be occasionally incorrect and the use of precise technical language is sparse.

Band 2:**4 – 6 marks**

The candidate has produced a discussion that expands on the factual knowledge but lacks detail in some areas. They show an adequate understanding of the processes and technologies involved including some reasons for their selection. They have provided some valid reasons for their choices. The response is structured and presented in a logical order.

Band 3:**7 – 9 marks**

The candidate has produced a thorough discussion in a logical and professional manner. They show a thorough understanding of the processes and technologies involved and have covered these in the correct logical order, including reasons behind the processes and technologies, the factors that need to be considered and the impact these factors may have on the implementation. They have clearly understood how all of the processes and technologies link to one another in terms of order and importance. They have provided valid reasons for their choices. The response is clear, coherent and all information has been presented in a logical order.

Test spec reference:

348: 1.4, 2.1, 2.3, 2.4

350: 2.1, 2.2, 3.1, 3.2, 4.3

351: 1.1, 1.2, 1.4, 2.4, 3.1, 3.2, 3.3, 3.4, 4.2

352: 1.1, 1.2, 3.1, 3.2

Total marks: 9

Band 1

1– 3 marks

Example band 1 response

In order to be more efficient and process their data better, the business should store the data in a database in the cloud. This would allow all staff to access the data wherever they were, even from home. The database could be programmed with queries which would perform specific tasks on the data such as sorting or creating graphs allowing people to see what the data means not just reading it. They would have to protect the database with usernames and strong passwords so it would be secure and they would need to keep a backup copy in case it got corrupted. The changes this might mean for the company might be that not as many staff would be needed to work on the data because a database is very efficient so some staff might no longer be needed. The business would have to be nice to them especially if they had worked for them for a long time and pay them their salary in compensation.

Band 2

4 – 6 marks

Example band 2 response

In order to process the data more effectively, the business should move to using analysis software. This would require the data to be stored in electronic format such as in a database, where it could be read and processed using specialist tools usually found within Information Management Systems. These could format, sort, or model the data, presenting the output in either graphs or charts as well as plain text. For many small businesses the best storage option is 'cloud-based' storage as it allows access from anywhere with an internet connection and the business doesn't have to spend their resources on setting up their own servers. Moving to this position, will require careful planning, making sure no existing data is lost or converted into the incorrect format. It will need a change management strategy to be developed to enable the business to manage the process and successfully overcome any resistance to this change that might be present within the business. This may be due to the fear of new technology which could be overcome with a program of training the staff to use the software. One of the models used for managing the change identifies three phases: Unfreeze, change, refreeze, which makes the whole process very simple and less stressful for the staff.

Band 3

7 – 9 marks

Example band 3 response

Providing a solution for this business requires a clear and full understanding of both the data they collect and the means of collection eg paper-based such as surveys or recording observations; or electronic such as Point of Sale Terminals or Loyalty cards etc. Processing large amounts of data can be more efficiently executed using electronic means for both storage and analysis. Specialised software exists for analysing electronically stored data and is able to present it in Tabular (numerical) form, Graphical (graphs & charts) form or text-based (visual) or audio formats. Depending on the access requirements and the required processing, the gathered data may be stored: locally on a single machine, on a remote server, or in a data warehouse for example. Each method has different risks associated with it, including; lack of remote access, or the security of data stored somewhere in the cloud (unknown location) for example. The processing of the data may be completed by a bespoke software package or by an off-the-shelf package, which will have an impact on both the required processing power and the storage location.

Any transition from the current system to an (other) electronic one, designed specifically to meet the business expansion requirements will necessitate some form of Business Continuity. This would include an analysis of the risk(s) using a Matrix or other threat assessment such as SWOT or PESTLE and would require a strategy to counter any identified risk. In particular this may include a Back-Up strategy to ensure preservation of the original data, along with a back-up of the data now replicated on a new electronic system. It may also require contingencies in relation to other partners or stakeholders of the business.

In managing any transition or change, a number of models are available (eg ADKAR, LEWIN, OAKLAND and TANNER) all of which identify specific stages in the change process. The choice of model to follow will depend on the mix of: the rationale for the change, the amount of change taking place, and the level(s) of resistance to change within the organisation, that needs to be overcome to effect the change. Various change management tools such as: flow diagrams, task analysis, progress reviews and evaluations, process analysis, can all be applied to design a road map to be followed. However there may still be resistance to the change which will require different strategies such as: additional training (for those affected), strong leadership (to lead from the front), negotiation and agreement (increased reward for more or 'new' work), even manipulation or coercion on occasions, in order to achieve the desired outcome.

Examination technique

Candidates with a good understanding of the subject being assessed can often lose marks in exams because they lack experience or confidence in exams or awareness of how to maximise the time available to get the most out of the exam. Here is some suggested guidance for areas that could be covered in advance to help learners improve exam performance.

Before the exam

Although candidates cannot plan the answers they will give in advance, exams for Technical qualifications do follow a common structure and format. In advance of taking the exam, candidates should:

- be familiar with the structure of the exam (ie number and type of questions).
- be aware of the amount of time they have in total to complete the exam.
- have a plan, based on the exam start and finish time for how long to spend on each question/section of the exam.
- be aware of how many marks are available for each question, how much they should expect to write for each question and allow most time for those questions which have the most marks available.

At the start of the exam session

At the start of the exam, candidates:

- should carefully read through the exam paper before answering any questions.
- may find it helpful, where possible, to mark or highlight key information such as command words and number of marks available on the question paper.
- identify questions which require an extended written answer and those questions where all or part of the question may be answered by giving bullets, lists etc rather than full sentences.

Answering the questions

Candidates do not have to answer exam questions in any particular order. They may find it helpful to consider, for example:

- tackling first those questions which they find easiest. This should help them get into the 'flow' of the exam and help confidence by building up marks quickly and at the start of the exam.
- tackling the extended answer question at an early stage of the exam to make sure they spend sufficient time on it and do not run out of time at the end of the exam.

Candidates should avoid wasting time by repeating the question either in full or in part in their answer.

Candidates should **always** attempt every question, even questions where they may be less confident about the answer they are giving. Candidates should be discouraged however, from spending too long on any answer they are less sure about and providing answers that are longer and give more detail than should be necessary in the hope of picking up marks. This may mean they have less time to answer questions that they are better prepared to answer.

Extended answer questions

Before writing out in full their answer to extended questions, candidates may find it helpful to identify the key requirements of the question and jot down a brief plan or outline of how they will

answer it. This will help clarify their thinking and make sure that they don't get 'bogged down' or provide too much detail for one part of the question at the expense of others.

Towards the end of the exam

Candidates should always set aside time at the end of the exam to read back through and review what they have written in order to make sure this is legible, makes sense and answers the question in full.

If a candidate finds they are running out of time to finish an answer towards the end of the exam, they should attempt to complete the answer in abbreviated or note form. Provided the content is clear and relevant, examiners will consider such answers and award marks where merited.

Further guidance on preparing candidates to take the exam is given in the City & Guilds publication, [Technical Qualifications, Teaching, Learning and Assessment](#) which can be downloaded free of charge from City & Guilds website.

4. Further information

For further information to support delivery and exam preparation for this qualification, centres should see:

City & Guilds

Qualification homepage: <http://www.cityandguilds.com/qualifications-and-apprenticeships/it/it-professional/5220-technical-in-digital-technologies#tab=information> which includes:

- Qualification handbook
- Synoptic Assignment
- Sample assessments

Technical Qualifications, Resources and Support:

<http://www.cityandguilds.com/techbac/technical-qualifications/resources-and-support>

Joint Council for Qualifications

Instructions for Conducting Examinations: www.jcq.org.uk/exams-office/ice--instructions-for-conducting-examinations