T Level Technical Qualification in Digital Business Services

Core knowledge and understanding

Paper A

Mark scheme

NCFE

This mark scheme has been written by the assessment writer and refined, alongside the relevant questions, by a panel of subject experts through the external assessment writing process and at standardisation meetings.

The purpose of this mark scheme is to give you:

- examples and criteria of the types of response expected from a student
- information on how individual marks are to be awarded
- the allocated assessment objective(s) and total mark for each question.

Marking guidelines

General guidelines

You must apply the following marking guidelines to all marking undertaken throughout the marking period. This is to ensure fairness to all students, who must receive the same treatment. You must mark the first student in exactly the same way as you mark the last.

- The mark scheme must be referred to throughout the marking period and applied consistently. Do not change your approach to marking once you have been standardised.
- Reward students positively giving credit for what they have shown, rather than what they might have omitted.
- Utilise the whole mark range and always award full marks when the response merits them.
- Be prepared to award zero marks if the student's response has no creditworthy material.
- Do not credit irrelevant material that does not answer the question, no matter how impressive the response might be.
- When allocating marks across AOs within an individual response these should logically link and should not be from disparate points of indicative content provided in the mark scheme.
- The marks awarded for each response should be clearly and legibly recorded in the grid on the front of the question paper.
- If you are in any doubt about the application of the mark scheme, you must consult with your team leader or the chief examiner.

Guidelines for using extended response marking grids

Extended response mark grids have been designed to assess students' work holistically. They consist of levels-based descriptors and indicative content.

Levels-based descriptors: Each level is made up of several descriptors for across the AO range - AO1 to AO3, which when combined provide the quality of response that a student needs to demonstrate. Each level-based descriptor is worth varying marks.

The grids are broken down into levels, with each level having an associated descriptor indicating the performance at that level. You should determine the level before determining the mark.

Indicative content reflects content-related points that a student may make but is not an exhaustive list; nor is it a model answer. Students may make all, some or none of the points

included in the indicative content as its purpose is as a guide for the relevance and expectation of the responses. Students must be credited for any other appropriate response.

Application of extended response marking grids

When determining a level, you should use a bottom up approach. If the response meets all the descriptors in the lowest level, you should move to the next one, and so on, until the response matches the level descriptor. Remember to look at the overall quality of the response and reward students positively, rather than focussing on small omissions. If the response covers aspects at different levels, you should use a best-fit approach at this stage and use the available marks within the level to credit the response appropriately.

When determining a mark, your decision should be based on the quality of the response in relation to the descriptors. You must also consider the relative weightings of the assessment objectives, so as not to over/under credit a response. Standardisation materials, marked by the chief examiner, will help you with determining a mark. You will be able to use exemplar student responses to compare to live responses, to decide if it is the same, better, or worse.

You are reminded that the indicative content provided under the marking grid is there as a guide, and therefore you must credit other suitable responses a student may produce. It is not a requirement either that students must cover all the indicative content to be awarded full marks.

Assessment objectives

This assessment requires students to:

AO1: Demonstrate knowledge and understanding of the digital business services sector
AO2: Apply knowledge and understanding of the digital business services sector to different situations and contexts
AO3: Analyse and evaluate information and issues related to the digital business services sector

The weightings of each assessment objective can be found in the qualification specification.

Section A: Culture and context   **Total for this section: 41 marks, plus 3 marks for QWC**

1	**Explain** two **impacts an economic factor could have on the business environment.**
	[2 marks]

AO1 = 2 marks

Award one mark for each explanation of the impact on the business environment of any economic factor, up to a maximum of two marks:

- if interest rates are high, then the impact is that borrowing money is more expensive (1)
- consumer trends influence what a business needs to produce to be successful (1)
- if a country is in a period of recession, then consumer confidence is low, which can reduce spending. (1)

2	APR provides technical support services to customers over the telephone. The company is considering a change to remote working. The customer service team manager is concerned about this change.
	Describe one **way in which remote working could have a negative impact on the way the company functions.**
	Explain why it has this impact.
	[2 marks]

AO1 = 1 mark
AO2 = 1 mark

Award **one** mark for a description of a way in which remote working could have a negative impact (AO1).

Award **one** mark for explaining why this impact would be negative to APR. (AO2)

Negative impact examples:

- reduces or removes face-to-face communication (1 AO1). Therefore, it would be difficult to maintain positive working relationships whilst working remotely via video conferencing as managers would be less able to identify when customer service team members require support or guidance (1 AO2) increase of staff monitoring required (1 AO1). APR may increase monitoring of calls with customers to compensate for lack of face-to-face communication, which may not be well received by the team. (1 AO2)

Accept any other suitable response.

3	An organisation wants to use a new system to track entry and exit to car parks. The system will use cameras and number plate recognition software. The old system used parking attendants to check tickets manually. The new system will issue fines through automated emails. The system does not allow the recipient of the fine the chance to reply. **Explain** two **possible impacts to the organisation of this change to autonomous operation.** [2 marks]

AO2 = 2 marks

Award one mark for each impact on the organisation of this change to autonomous operation, up to a maximum of two marks, for example:

- This change to autonomous operations could result in a financial saving as fewer parking attendants would need to be employed. (1)
- This change to autonomous operations could result in complaints or appeals as recipients are unable to reply to the fines. (1)
- This change to autonomous operations would mean the organisation would have to recruit or reskill staff to monitor and maintain the cameras and number plate recognition software. (1)

Accept any other suitable response.

4	A fresh food delivery business has redeveloped its website and much improved its digital analytics capability. The business had been losing customers to a local competitor, but now wants to expand by increasing sales and offering a wider range of products. **Describe** three **ways in which improved digital analytics capability might benefit the business's sales efforts.** [3 marks]

AO2 = 3 marks

Award **one** mark for each relevant point made in describing the benefits of improved digital analytics capability to business sales, up to a maximum of **three** marks.

- Customer data will give the owner information on the characteristics of the customers and indicate why they were losing customers to a local competitor. (1)
- It could indicate how a demographic interacts with the site to order food products, to support tailoring the website to that demographic. (1)
- From this they can focus their sales effort on the food products that each demographic is interested in and select relevant new product ranges. (1)
- The food company could target their marketing campaigns at the harder to sell food items. (1)
- Use demographic data to identify add on products that are most likely to appeal to a specific customer group. (1)

Accept any other suitable response.

5	A national bank wants to stop providing bank statements on paper and to encourage customers to access statements online only.
	Describe two external factors that may have influenced this change in business practice.
	Explain the effect that each of these factors may have on the bank's customers in future.
	[4 marks]

AO2 = 2 marks
AO3 = 2 marks

Award **one** mark for each description of an influencing external factor, up to a maximum of **two** marks.
Award **one** mark for each explanation of an effect on customers as a result of the **related** influencing external factor up to a maximum of **two** marks.
Marks must only be allocated for effects of **different** external factors, two AO3 marks cannot be given for multiple effects of the same external factor.

- Consumer behaviour:
  - more customers show a willingness to adopt online banking technology as systems change and support banking transactions with a higher level of security (1 AO2). Although there may be a level of consumer confidence with such changes, the bank also needs to recognise that there are still aspects of online banking which some customers may not have the digital skills or technology available to them to ensure they can still access the information they need. (1 AO3)
- Laws and policies:
  - with an increase in the need to keep data secure, the bank may well be considering this move as a result of law and policy changes such as GDPR (1 AO2). Utilising online banking statements with strong customer authentication regulations may help to prevent unauthorised access to information and funds. (1 AO3)
- Increased costs:
  - the bank may incur increased costs for staffing and consumables, such as printing, paper and postage costs if they continue to produce paper statements (1 AO2). These costs could be transferred onto the customers if they continue to practice in this way. (1 AO3)

Accept any other suitable response.

6	You are the new manager of a call centre. You are asked to deal with recurring issues within the business. These are: • complaints from customers about the professionalism of staff • inappropriate use of the internet • customer data being recorded on paper and not being securely destroyed. You decide to introduce a code of conduct. (a) Describe the purpose of a code of conduct. (b) Explain how the code of conduct would help to resolve the recurring issues in the call centre [4 marks]

AO1 = 1 mark
AO2 = 3 marks

(a)

Award **one** (AO1) mark for an accurate description of the purpose of a code of conduct.

• A code of conduct is a set of rules which outlines the responsibilities and accepted practice of a company and its employees. (1 AO1)

Accept any other suitable response.

(b)

Award **one** mark for each accurate explanation of how a code of conduct would help resolve the recurring issues in the call centre. A maximum of **one** mark for each explanation.

• The code of conduct will outline professional practice expected of employees when communicating with customers of the call centre, so staff will be fully aware of the expected standards of behaviour. (1 AO2)
• The code of conduct will regulate the use of equipment and facilities, such as using the internet. (1 AO2)
• The code of conduct will outline procedures for handling and destroying personal data, so all employees understand their responsibilities. (1 AO2)
Accept any other suitable response.

7	Sami is a 16 year old digital apprentice at a software developer. He often spends up to 14 hours per day online completing work, playing games, or using social media. Using digital technology can create problems for Sami's physical health. Give two **possible physical problems.** Explain two **ways that each problem could be reduced** [6 marks]

AO1 = 2 marks
AO3 = 4 marks

Award **one** mark for each potential physical health problem, up to a maximum of **two** marks (AO1).

Award **one** mark for each explanation of how the problem could be reduced, up to a maximum of **four** marks (AO3).

AO1

- Repetitive strain injury (RSI). (1)

AO3

- Sami could perform a DSE/workstation assessment to identify possible problems and how to reduce them. (1)
- By using ergonomically designed tools, such as a desk with adjustable height and a desk wrist rest, Sami would reduce the problems caused by RSI (1)

AO1

- Eye strain. (1)

AO3

- Taking regular breaks from the screen. (1)
- Applying a screen filter will help reduce glare and therefore reduce the eye strain. (1)

Accept any other suitable response.

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8   **A cinema uses social media platforms to increase engagement with customers.**

The manager of the cinema has noticed staff are starting to use their personal social media accounts to represent the company and engage with customers.

This goes against company policy.

Describe three **possible risks to the cinema if the problem continues.**

For each risk, explain a possible impact on the cinema.

[6 marks]

AO2 = 3 marks
AO3 = 3 marks

Award **one** mark for each appropriate risk to the cinema up to a maximum of **three** marks. Award an additional **one** mark for each possible impact associated with the risk.

- Privacy risk: Cinema staff responding to customer comments on personal accounts.
  - Possible impact: leads to a loss of control of business information, which may result reputation/brand damage.
- Security risk: Identification of employees by outside threats, for example, hackers.
  - Possible impact: Possible vulnerability of social engineering of staff by threat actor. Confidentiality of employee personal details could be used to compromise the integrity of cinema systems, for example, guessing passwords.
- Non-compliance risk: Breach of organisational policies and code of conduct.
  - Possible impact: Staff engaging on personal accounts would result in lack of visibility of activity and customer engagement.
- Staff conduct risk: Breach of organisational policies and code of conduct.
  - Possible impact: Staff demonstrate unprofessional or offensive behaviour which impacts the reputation of the cinema.

Accept any other suitable response.

9	The banking and insurance functions of OSR Trading Group are currently under the same management and operational structure.
	This has led to conflicts of interest and inefficiency.
	Some members of staff currently have responsibilities in both the banking and insurance functions and the managerial monitoring of this is considered ineffective. Additionally, IT support and finance are duplicated across banking and insurance. IT support and finance rely heavily on digital technologies.
	OSR has now been required to separate the two functions.
	Discuss ways in which technical change can be managed to preserve the digital operational integrity for OSR Trading Group.
	[12 marks, plus 3 for QWC]

It is expected that student responses will examine the need for technical change within the OSR Trading Group and how this could be managed to preserve the digital operational integrity.

AO1 = 4 marks
AO2 = 4 marks
AO3 = 4 marks

Band	Mark	Descriptor
4	10–12	AO3 Discussion of the ways in which technical change can be managed, the role technical change management plays and how digital operational integrity can be maintained is **comprehensive**, **effective, relevant**, and shows **detailed** understanding and **logical** and **coherent** chains of reasoning throughout. Given conclusions are informed and are fully supported with rational and balanced judgements.
		AO2 Applied all relevant knowledge of change management to the context (OSR Trading Group) and shows a **detailed** functional understanding of digital operational integrity.
		AO1 A **wide range** of relevant knowledge and understanding of the factors which influence change management, the role technical change management plays and how digital operational integrity can be maintained, which is **accurate** and **detailed**. A **wide range** of **appropriate** technical terms are used.
		The answer demonstrates **comprehensive** breadth and/or depth of understanding.
3	7–9	AO3 Discussion of the ways in which technical change can be managed, the role technical change management plays and how digital operational integrity can be maintained is **in most parts effective** and **mostly relevant**, showing **mostly logical and coherent** chains of reasoning. Given conclusions supported by judgements that consider most of the relevant arguments.

		AO2 Applied mostly relevant knowledge of change management to the context (OSR), showing **some** functional understanding of digital operational integrity.
		AO1 Knowledge and understanding of the factors which influence change management, the role technical change management plays and how digital operational integrity can be maintained **is in most parts clear** and **mostly accurate**, although on occasion **may lose** focus.
		The answer demonstrates **reasonable** breadth and/or depth of understanding, with **occasional** inaccuracies and/or omissions.
2	4–6	AO3 Discussion of the ways in which technical change can be managed, the role technical change management plays and how digital operational integrity can be maintained is in **some parts effective** and of **some relevance,** with some understanding and reasoning taking the form of **generic statements** with some development. Given brief conclusions supported by judgements that consider only the most basic arguments.
		AO2 Applied some, but limited knowledge of, change management to the context (OSR) and may show a lack of functional understanding of digital operational integrity.
		AO1 Knowledge and understanding of the factors which influence change management, the role technical change management plays and how digital operational integrity can be maintained show **some** but **limited** accuracy**,** focus and relevance.
		The answer is **basic** and shows **limited** breadth and/or depth of understanding, **with** inaccuracies and omissions.
1	1–3	AO3 Discussion of the ways in which technical change can be managed, the role technical change management plays and how digital operational integrity can be maintained is **minimal** and **very limited** in effectiveness and relevance. Given tenuous conclusions that are unsupported and show little relevance to the question aims.
		AO2 Applied general knowledge and/or general assertions about change management with little relevance to the context (OSR).
		AO1 Knowledge and understanding of the factors which influence change management, the role technical change management plays and how digital operational integrity can be maintained shows very **minimal** accuracy**,** focus and relevance.
		The answer has **isolated** points, showing **very minimal** breath **and/or** depth of understanding, with **significant** inaccuracies and omissions.
	0	No creditworthy material.

Quality of written communication (QWC) = 3 marks

Mark	Descriptor
3	The answer is clearly expressed and well-structured. The rules of grammar are used with effective control of meaning overall. A wide range of appropriate technical terms is used effectively.
2	The answer is generally clearly expressed and sufficiently structured. The rules of grammar are used with general control of meaning overall. A good range of appropriate technical terms is used effectively.
1	The answer lacks some clarity and is generally poorly structured. The rules of grammar are used with some control of meaning and any errors do not significantly hinder the overall meaning. A limited range of appropriate technical terms is used effectively.
0	There is no answer written or none of the material presented is creditworthy. **or** The answer does not reach the threshold performance level. The answer is fragmented and unstructured. The errors in grammar severely hinder the overall meaning.

Indicative content

Key principles

AO1 The management of technical change in digital operational integrity:

- preparation and planning:
  - o innovations within digital technology, gaining an understanding of how technology could support each function to maintain the integrity of OSR Trading Group and customer relations when the functions have split to ensure that customers are not disadvantaged for the new structure
  - o effectively communicating the rationale for the change with key stakeholders of OST to ensure all are aware and are given one clear organisational message
  - o communicating the benefits of the change to all stakeholders and getting 'buy in' from all areas of the business who the change effects.
- operations:
  - o considerations given to the interaction of new or upgraded tools and processes into current digital ecosystem
  - o establishing best practice for use of new or upgraded tools and processes that exist in the two businesses functions, with a view of sharing this in a timely manner through staff development and training sessions. This should happen when the functions are split to provide staff with current and future expectations.

Application (AO2)/analysis (AO3)

- utilising a CAB (Change Advisory Board) who are responsible for:
  - o prioritising and reviewing change requests to ensure they are in the best interest of OST Trading Group, the two new functions within it and the customers (AO2)
  - o the monitoring of any changes and providing feedback to address conflict and inefficiencies which have become apparent and could have a negative impact after the functional split has happened. (AO2)
- request for change:
  - o considering the feasibility and viability of change in terms of financial and resource availability, alongside an analysis of benefit(s) of implementing change, whilst agreeing stages of approval.

       This should happen when the functional split is being planned but also after the split, when analysing the benefit of the new business structure. (AO3)

- setting SMARTER objectives to enable the business to manage and monitor the process, evaluating and re-evaluating throughout the split of the functions to aid continuous improvement (AO2)
- considering and mitigating potential risks, such as:
  - resistance to change from staff/teams, providing appropriate support and training to ensure that members of staff understand the need for the structural split. In this case, it is to ensure that there are no conflicts of interest and to make the business more efficient. (AO3)
- impact:
  - forecasting the impact of change implementation on the operational environment, both measuring and analysis of the positive and negative impact if the structural change in the short and long term. (AO2)
- configuration of digital system impacted by the change and how this may differ for each of the new functions of the business (AO2)
- roll back planning – recovering to a previous stable configuration to ensure that no data is lost, either business critical or customer data, to ensure business continuity should they lose data or information as a result of the functional split. This could be the case when perceived duplication of IT support and finance are split, and previous systems need to be referred to (AO2) maintaining technical and non-technical documentation retaining records of all decisions and changes to ensure traceability and accountability of the rationale for the split and the implementation of the project (AO3).

Section B: Diversity and inclusion and digital environments

Total for this section: 39 marks plus 3 marks for QWC

10	Which one of the following is not protected under the Equality Act 2010?
	A gender reassignment
	B geographical location
	C religion or belief
	D pregnancy and maternity
	[1 mark]

AO1 = 1 mark

Award **one** mark for:

B geographical location

11	Which one of the following not a characteristic of transmission control protocol (TCP)?
	A application
	B data
	C presentation
	D transport
	[1 mark]

AO1 = 1 mark

Award **one** mark for (knowledge AO1):

C presentation

12	Describe two positive effects of digital inclusion for an individual.
	[2 marks]

AO1 = 2 marks

Award one mark for each correct description of a positive effect of digital inclusion for an individual, up to a maximum of two marks.

- Greater employment opportunities as the world of work becomes more digitally focused. (1)
- Enhanced access and connectivity to digital technology and therefore more communication and entertainment options. (1)
- Enhanced quality of life due to additional services being available from own living environment. (1)
- Greater scope of communication, connectivity with friends, family and communities available, via social media channels and online chat/calls, which can avoid isolation and loneliness. (1)

Accept any other suitable response.

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13 **A local sports venue has a diverse range of customers who speak different languages. Customer feedback suggests some of these customers feel excluded because the digital booking system is only available in one language.**

Describe one **principle of digital inclusion and explain why this would help the venue resolve the accessibility problem.**

[2 marks]

AO1 = 1 mark
AO2 = 1 mark

Award **one** (AO1) mark for identifying a principle of digital inclusion, and a further **one** mark for an explanation of how to resolve the accessibility problem (AO2).

Digital inclusion principles:

- the venue would need to ensure no one is disadvantaged by the digital system (1 AO1)
- to consider the approach of implementing a booking system which is accessible to all, for example having multi-lingual support. (1 AO2).

Accept any other suitable response.

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14 **Describe how Random Access Memory (RAM) stores data differently from solid state drives (SSDs).**

[2 marks]

AO1 = 2 marks

Award **one** (AO1) mark for each element of the description up to a maximum of **two** marks.

- RAM is volatile as it stores data for a limited time only (1) whereas SSD storage stores data for an unlimited time. (1)

Accept any other suitable response.

15	A large business currently stores all its system data in one location on site. This has been identified as a risk by a new manager.
	Explain two **other ways to store data and how they would reduce the risk.**
	[2 marks]

AO2 = 2 marks

Award one mark for **each** explanation of a data storage option, up to a maximum of two marks.

- Offsite storage could be used. This would mitigate potential risk because if any loss occurred at the primary on-site location then this would still be available at the off-site storage and could be recovered. (1)
- Cloud storage could be used as this would store data externally to the organisation and also allow the data to be accessed from multiple locations. (1)

Accept any other suitable response.

16	Matthew owns a mobile hairdressing salon. He is considering using 'Software as a Service' to manage his appointment bookings and accounts. He currently uses a six year old MacBook for all his business needs.
	Define the term 'Software as a Service'.
	Explain four **potential** disadvantages **Matthew should consider when making his decision.**
	[5 marks]

AO1 = 1 mark
AO2 = 4 marks

Award **one** (AO1) mark for a definition of what 'Software as a Service' is.
Award **one** (AO2) mark for each explanation of the potential disadvantages of using 'Software as a Service' (SaaS) that Matthew should consider, up to a maximum of **four** marks.

AO1

- SaaS is a software delivery service where the user does not need to purchase or install software to successfully access and use the desired software. (1)

AO2
- SaaS is only available via the internet and as Matthew runs a mobile business, he could experience patchy service. (1)
- Privacy and security are major disadvantages of SaaS and Matthew would need to consider this as he will be storing customer data. (1 AO2)
- Many SaaS vendors optimise their tools for Windows and therefore, Matthew would need to switch from his MacBook to a Windows machine. (1)

- As Matthew would never own the service, he may not be able to opt out of software upgrades which could take place when he requires access to the system. (1)

Accept any other suitable response.

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17   **A marketing business, with little diversity in their management team, is recruiting a manager to run their regional digital marketing projects.**

Although the business has been extremely profitable since it was established 20 years ago, profits have gradually declined over the last three years. If this trend continues the business will begin to make a loss in two years' time.

Describe three ways **in which the principle of diversity and inclusion could help the business recover profitability in this scenario.**

For each way, **discuss how it would be effective.**

[6 marks]

AO2 = 3 marks
AO3 = 3 marks

Award **one** mark for each description of the way the principle of diversity and inclusion could help the business, up to a maximum of **three** marks (AO2) and **one** mark for a related discussion point for each description, up to a maximum of **three** marks (AO3).

- Always appointing the strongest candidate for the role will ensure the regional team perform to a higher standard. (1 AO2). Diversifying the management team would mean more role models that could empower other staff from underrepresented groups to put themselves forward for promotion, thus bringing on new talent in the company. (1 AO3)

- Valuing differences and adding a greater variation in the employment demographics within the company will bring in new ideas which could address the business's decline. (1 AO2). By following inclusive practices, the business may see greater employee retention as all staff would see their value to the company is based on merit. (1 AO3)

- Reducing the risk of reputational damage by eliminating unfair and inappropriate barriers and therefore could stop the business's profit from declining further. (1 AO2). By preventing or addressing discrimination and ensuring policies and procedures are being adhered to, reinforces that dignity and respect is being applied to all staff irrespective of their personal characteristics. (1 AO3)

Accept any other suitable response.

18	Commercial organisations now have more data available for analysis and manipulation to inform their business decision making.
	Discuss how domestic internet of things (IoT) devices have enabled this development.
	[6 marks]

AO3 = 6 marks

Award **one** mark for each well justified and relevant discussion point about how domestic internet of things (IoT) devices has increased the amount of data for analysis and manipulation, and thereby informs business decision making, up to a maximum of **six** marks.

- as part of the set up the user gives their consent to the speaker storing and using date so this can then be analysed by organisations to target users with advertisements or to influence product developments (1)
- Some smart devices can track a user's location at any time, this can allow organisations to target marketing in relation user's habits and behaviours, this maybe in recommendations or advertising (1).
- Some smart devices can access very personal data about users such as health information, not only can this allow business to target products and services to the user based on their health conditions it can also allow businesses to predict their behaviours and target advertising campaigns or product developments based on that (1)
- As the user generally uses one account to log into multiple devices all tracking can be shared and used to form a picture of the user which can then be used to target them with specific products or to track their behaviours and predict future buying behaviours. (1)
- The devices which are connected to the IoT are easily integrated into day to day life, such as a virtual personal assistant, a smart phone or a smart TV, users become dependent upon them and use them in all aspects of their life so they have access to almost unlimited data about the user which can be used to form a picture to support commercial organisations in all aspects of their business. (1)
- The IoT connects all data so commercial organisations can use different variables to create a view of the behaviours and expectations of groups of people based on various criteria such as age, location, gender and use this to influence their business decisions. (1)

Accept any other suitable response.

19	A medium-sized independent training provider has decided to develop an intranet website. The website will contain course information, timetabled sessions, and student details.
	The training provider has learners that attend courses at a range of centres throughout the country. Courses can last from a single day to three months. The training provider also offers distance learning courses, that are accessed by learners both from the UK and Europe.
	The training provider is considering whether to use a virtual computing or cloud computing system for this.
	Analyse the relevant benefits of virtual computing and cloud computing for the training provider.
	[12 marks, plus 3 for QWC]

AO1 = 4 marks
AO2 = 4 marks
AO3 = 4 marks

Band	Mark	Descriptor
4	10–12	AO3 Analysis of the virtual computing systems and cloud computing systems is **comprehensive**, **effective,** and **relevant**, showing **detailed** understanding and **logical** and **coherent** chains of reasoning throughout. Given conclusions are informed and fully supported with rational and balanced judgements. AO2 Applied all relevant knowledge of virtual and cloud computing to the context and shows a **detailed** functional understanding of benefits and drawbacks. AO1 A **wide range** of relevant knowledge and understanding of the processes and technologies involved and how they link to one another, which is **accurate** and **detailed**. The answer demonstrates **comprehensive** breadth and/or depth of understanding.
3	7–9	AO3 Analysis of the virtual computing systems and cloud computing systems is **in most parts effective** and **mostly relevant**, showing **mostly logical and coherent** chains of reasoning. Given conclusions supported by judgements that consider most of the relevant arguments. AO2 Applied mostly relevant knowledge of virtual and cloud computing to the context, showing **some** functional understanding of benefits and drawbacks. AO1 Knowledge and understanding of the virtual computing systems and cloud computing systems **is in most parts clear** and **mostly accurate**, although on occasion **may lose** focus. The answer demonstrates **reasonable** breadth and/or depth of understanding, with **occasional** inaccuracies and/or omissions.

2	4–6	AO3 Analysis of the virtual computing systems and cloud computing systems is in **some parts effective** and of **some relevance,** with some understanding and reasoning taking the form of **generic statements** with some development. Given brief conclusions supported by judgements that consider only the most basic arguments. AO2 Applied some, but limited, knowledge of virtual and cloud computing to the context and may show a lack of functional understanding of benefits and drawbacks. AO1 Knowledge and understanding of the virtual computing systems and cloud computing systems show **some** but **limited** accuracy, focus and relevance. The answer is **basic** and shows **limited** breadth and/or depth of understanding, **with** inaccuracies and omissions.
1	1–3	AO3 Analysis of the virtual computing systems and cloud computing systems is **minimal** and **very limited** in effectiveness and relevance. Given tenuous conclusions that are unsupported and show little relevance to the question aims. AO2 Applied general knowledge and/or general assertions about virtual and cloud computing with little relevance to the context. AO1 Knowledge and understanding of the virtual computing systems and cloud computing systems show very **minimal** accuracy, focus and relevance. The answer has **isolated** points, showing **very minimal** breath **and/or** depth of understanding, with **significant** inaccuracies and omissions.
	0	No creditworthy material.

Quality of written communication (QWC) = 3 marks

Mark	Descriptor
3	The answer is clearly expressed and well-structured. The rules of grammar are used with effective control of meaning overall. A wide range of appropriate technical terms is used effectively.
2	The answer is generally clearly expressed and sufficiently structured. The rules of grammar are used with general control of meaning overall. A good range of appropriate technical terms is used effectively.
1	The answer lacks some clarity and is generally poorly structured. The rules of grammar are used with some control of meaning and any errors do not significantly hinder the overall meaning. A limited range of appropriate technical terms is used effectively.
0	There is no answer written or none of the material presented is creditworthy. **or** The answer does not reach the threshold performance level. The answer is fragmented and unstructured. The errors in grammar severely hinder the overall meaning.

Indicative content

AO1 Components of virtual computing systems:

- virtual machines (VMs)
- clients
- servers
- virtual switches, routers, and firewalls
- hypervisor (type 1 and type 2)
- private networks

AO1 Components of cloud computing systems:

- cloud services Infrastructure as a Service (IaaS):
  - applications, O/S, data (client managed)
  - servers, network infrastructure, storage (vendor managed).
- Platform as a Service (PaaS):
  - applications, data (client managed)
  - servers, network infrastructure, storage, O/S (vendor managed).
- Software as a Service (SaaS):
  - access to application software
  - no installation or maintenance
  - client only managed user
  - rest is managed by the vendor.

AO2 Benefits of virtual computing systems:

- cost effective in larger environments which is particularly relevant with this business as it operates nationwide and also in Europe
- productive management in larger environments which is vital to ensure that distance learners are able to access their learning materials
- resilient to ensure that learners are able to access materials regardless of level of demand at any given time
- disaster recovery options to ensure that regardless of problems faced by the organisation learners can still access materials and their submitted work is not lost.

AO2 Benefits of cloud computing:

- cloud portability – ability to quickly and easily move services which allows learners to access materials regardless of the service used by the business
- cloud sourcing – purchasing services from a third party using the cloud which would allow the business to purchase storage services to allow learner to safely store and access their work
- storage – no physical limitations on storage capacity which would be crucial as learners need to have sufficient space to store their work without limitation and this would allow them to upload a wide range of media, such as video and audio.

Analysis
AO3 Analysis could include considerations of:

- hardware – system requirements, data storage strategies and software - operating system, applications. The business would have to ensure that they have the correct specification hardware and software in all of their centres, regardless of their location, that could run and

maintain their chosen system across the network of centres that are spread across the country. Should this not be the case, money would have to be allocated to upgrade their hardware and software which would divert finance from other courses that they plan to run in the future for the benefit of its learners

- networks – wireless, wired, cloud services. The business would have to take their current network into consideration when deciding on the system to adopt. This would be a complex task as there are centres throughout the country and some learners access throughout Europe. They would need to select a system that could run on their network or invest in other network infrastructure. They would also have to consider the system requirements of individual learners who are in the distance learning cohort

- legislation – regulations, compliance, data requirements, data storage. The business would have to make sure that they are aware of the relevant legislation and how this applies to their selected system. They would also need to ensure that the allocated legislation complies to the job role of a current employee or employ a new compliance officer.

Section C: Learning and planning   **Total for this section: 20 marks**

20	**Describe** one **example of an emerging technology trend applied within the digital gaming sector.**
	[1 mark]

AO1 = 1 mark

Award **one** (AO1) mark for any of the following examples of an emerging trend.
- Augmented reality (AR) overlays digital information onto real-world imagery. Often used in location-based gaming. (1)
- Virtual reality (VR) is used within the gaming sector allowing users to utilise VR headsets to enter immersive worlds and scenarios. (1)

Accept any other suitable response.

21	**Jimmy has recently completed his data technician apprenticeship and gained employment with a business intelligence company. His manager has told him that there is a range of organisational funds available for his professional development.**
	In relation to Jimmy's data technician role, explain two **advantages of professional development.**
	[2 marks]

AO2 = 2 marks

Award **one** (AO2) mark for each accurate and relevant explanation of advantage of professional development in relation to Jimmy's role, up to a maximum of **two** marks.
- As data science is a sector that is growing fast and changing frequently, ensuring he is up to date with the latest tools and techniques for data analysis will allow Jimmy to maintain currency and relevance in his chosen industry. (1)
- Attending professional development will allow Jimmy to increase his knowledge of industry standards and allow him to adhere to the latest standards, for example Data Ethics Framework. (1)

Accept any other suitable response.

22	ARLive is an augmented reality software development company which is researching a newly released headset. The company has decided to use forums, blogs and social media platforms to support the research.
	Describe how ARLive can check the reliability and validity of these sources.
	[2 marks]

AO2 = 2 marks

Award **one** mark for describing each relevant way in which ARLive could support checking reliability and validity of sources, up to a maximum of **two** marks.

ARLive could consider the following when checking the reliability and validity of these sources:

- author expertise – by making a judgement on whether the author is known and respected as this is a cutting-edge area and therefore up-to-date knowledge is vital (1)
- bias – does the author have a vested interest in the product such as a financial gain if the product does well? For example, the author might have written software that could be used on the headset (1)
- evidence – what evidence is available that the author has first-hand knowledge and experience of the newly released headset and the kind of software and hardware needed for this device? (1)
- date of publication, as ARLive are interested in the newly released version of a headset, posts made prior to the release would not necessarily be reliable. (1)

23	**Explain** one **purpose of cost-benefit analysis in project planning.**
	[2 marks]

AO1 = 2 marks

Award up to **two** (AO1) marks for explaining one purpose of a cost-benefit analysis in project planning. The explanation should include a description of one analytic outcome (1) and why that outcome is important/useful. (1)

- To decide on the viability of the project (1) which will show whether the project should go ahead. (1)
- To quantify the intended deliverables (1) to demonstrate what outcomes can be expected from the project. (1)

Accept any other suitable response.

24	A further education college wishes to introduce industry placements.
	Describe two **tools which could be used for effective monitoring of the project and explain why they are appropriate in this case.**
	[4 marks]

AO1 = 2 marks
AO2 = 2 marks

Award **one** mark (AO1) for a brief description of each relevant tool, up to a maximum of **two** marks.

Award **one** mark (AO2) for explaining why each tool is useful in the context, up to a maximum of **two** marks.

- Time series tools - Gantt charts, programme evaluation review techniques (PERT) charts, flowcharts, critical path analysis (1 AO1) to support time management and organisation of the placements to show when they take place within the schedule of the student's course. (1 AO2)
- Dashboards (1 AO1) which support monitoring of progress and show any areas which may need a further intervention. For example, a placement provider that is not providing the necessary PPE to the students who are attending their placement at this location. (1 AO2)
- RACI (responsible, accountable, consulted, or informed) matrix, stakeholder matrix (1 AO1) which supports communication plans/channels between the college, the students and the industrial placements. (1 AO2)
- Power interest matrix to manage stakeholders (1 AO1) to support the decision-making process throughout the lifecycle of the project which would begin with recruiting new placement locations through to evaluating the success of the student's placement achievements. (1 AO2)

Accept any other suitable response.

25	'A good understanding of project scope and user/client requirements can lead to accurately estimating the budget and timeline of a project'.
	Discuss this statement.
	[4 marks]

AO3 = 4 marks

Award **one** mark (AO3) for each discussion point relating to how project scope **and** user requirements can lead to accurate estimations of budget **and** timeline, up to a maximum of **four** marks.

- Having a comprehensive understanding of the scope of a project is critical for accurate budget estimations because the scope considers the size and scale of a project. (1)
- The scope of the project has a direct impact on the staffing required and raw materials required, and these require budgets to be allocated to them. (1)
- Having a comprehensive understanding of the client's requirements is important to accurately estimating both budgets and timelines. (1)
- Once the client's requirements have been communicated then the budget and timeline can be created to match this and ensure that there is the necessary budget in place to purchase the required equipment and resources. (1)

Accept any other suitable response.

| 26 | A digital project has failed. It started well, but a member of staff left after two months and was not replaced. Their work was transferred to another member of staff who missed deadlines and made some significant errors.

Other reasons for failure of the project may have been a:

- **lack of experience in managing a project**
- **lack of confidence to communicate concerns.**

You have been asked to suggest a reflective technique that could support the member of staff to review the reasons for the project failure, and identify lessons learnt.

(a) Identify an appropriate reflective technique.
(b) Describe two **ways in which it could be applied in this scenario.**
(c) Analyse two **ways in which it could support identifying lessons learnt.**

[5 marks] |

AO1 = 1 mark
AO2 = 2 marks
AO3 = 2 marks

(Note that three relevant techniques are given below to support marking. The student is only expected to cover one technique, and discussion around it, in their response to the question.)

(a) Award **one** (AO1) mark for identifying an appropriate reflective technique.

AO1

- Kolb's Experiential Learning Cycle (1)
- Boud, Keogh and Walker's 3 stage model (1)
- Gibbs' Reflective Cycle (1).

(b) Award up to **two** (AO2) marks for application of the reflective technique to the scenario

AO2

Gibbs' reflective cycle would allow for a reflection of experiences over the project's life and an opportunity to go through six stages of reflection, to consider the events of the project and the problems experienced (1). Gibbs' considers individual feeling and processes so the contribution to the project and a future action plan could be considered (1).

Kolb's approach is applied using a cycle method which would allow the member of staff to reflect on their concrete experiences over the project's life, for example, reflection on response to the staff member leaving (1). This reflection can then be applied to future projects that are similar to the project that failed or similar circumstances, for example, when workload unexpectedly increases (1).

Boud, Keogh and Walker have three elements which would be applied to the stages that were part of the project. In this case, the organisational skills could be focused on by removing negative experiences (1), such as when workload increased, or targets missed during the project's unsuccessful completion (1).

(c) Award up to **two** (AO3) marks for a discussion point about how the technique could support to identify lessons learnt.

AO3

As Gibbs reflects on experiences then this would be ideal to review the individual contribution to the project because it starts with a description of the project and feelings about performance, which sets out what has been done and what is thought about it. From this, personal feelings relating to the project can be considered and reviewed for problems or concerns (1). It finishes with analysis, conclusions, and action plans. This allows for a full consideration on the events of the project and for an honest review of one's individual performance. This then results in a plan on how to improve in the future (1).

Kolb has just four stages, and is a learning cycle and focusing attention on concrete experiences and then applying knowledge gained from this process to be applied to self-development, and therefore improvements when applying this knowledge gained to new experiences and projects (1). By only reflecting upon concrete experiences, then the process really focuses on what matters to the final outcome and removes elements that are less vital to the review process (1).

Bould, Keogh and Walker focus on behaviours, ideas and feelings that have been experienced during a project which are all considered when developing action plans for improvement in future projects (1). This process filers out negative experiences which facilitates the drawing of better conclusions from the process and therefore more positive outcomes for future action planning (1).

Assessment Objective Grid

Question	AO1	AO2	AO3	QWC	Total
1	2				2
2	1	1			2
3		2			2
4		3			3
5		2	2		4
6	1	3			4
7	2		4		6
8		3	3		6
9	4	4	4	3	15
10	1				1
11	1				1
12	2				2
13	1	1			2
14	2				2
15		2			2
16	1	4			5
17		3	3		6
18			6		6
19	4	4	4	3	15
20	1				1
21		2			2
22		2			2
23	2				2
24	2	2			4
25			4		4
26	1	2	2		5
Total	**28**	**40**	**32**	**6**	**106**

Document information

The T Level Technical Qualification is a qualification approved and managed by the Institute for Apprenticeships and Technical Education.

Owner: Head of Assessment Design

Change History Record

Version	Description of change	Approval	Date of Issue
v1.0	Published.		2020
v1.1	NCFE rebrand.		September 2021
v1.2	Sample added as a watermark.	November 2023	16 November 2023