T Level Technical Qualification in Digital Support Services

Core knowledge and understanding

Paper A

Mark scheme

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 0 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 assessment objectives (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 marking grids have been designed to assess students' work holistically. They consist of band-based descriptors and indicative content.

Band-based descriptors: each band 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 band-based descriptor is worth varying marks.

The grids are broken down into bands, with each band having an associated descriptor indicating the performance at that band. You should determine the band 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 band, you should use a bottom-up approach. If the response meets all the descriptors in the lowest band, you should move to the next one, and so on, until the response matches the band 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 bands, you should use a best-fit approach at this stage and use the available marks within the band 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 (AOs)

This assessment requires students to:

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

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

Section A: Business context and culture   **Total for this section: [39 marks]**
                                                [plus 3 marks for QWC]

1	**Give** one **business environment that sells products direct to the customer.**
	[1 mark]

AO1 = 1 mark

Award **one** mark for the correct answer:

- business to consumer / B2C (1).

2	**Identify** one **mitigation technique that can reduce the impact of unsafe or inappropriate use of technology.**
	[1 mark]

AO1 = 1 mark

Award **one** mark for a mitigation technique. For example:

- regulate use of digital technology (1) (for example, effects on sleep patterns, effects on mental health, screen breaks)
- report misuse to relevant authority (1) (for example, platform owners, police)
- display screen equipment / DSE / workstation assessment (1)
- self-exclusion (1) (for example gambling website/app).

Accept any other suitable response.

3	**George is giving a talk on the use of digital technology to a company that currently relies on face-to-face communication.**
	Explain one **way that digital technology could impact upon this company's culture.**
	[2 marks]

AO2 = 2 marks

Award **one** mark for **each** explanation point of a way that digital technology could impact on this company's culture, up to a maximum of **two** marks. For example:

- a reduction in face-to-face meetings could have a negative impact on creativity or sharing ideas (1) and therefore this may reduce the productivity and output of the business (1)
- moving away from face-to-face communication to use of digital technology such as collaboration tools could enable more productivity and efficiency (1) as teams can work in 'real' time on shared documents (1).

Accept any other suitable response.

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4 **A company is launching a new set of easy-to-use smart devices. Feedback from a focus group found that 'products are really easy to use', but many 'fear there will be a loss of privacy'.**

The company would like to produce an information leaflet that can be sent to those interested in the product. This would inform them about the following aspects of digital security:

- **digital footprint**
- **surveillance.**

a) Describe each **of these aspects of digital security.**

[2 marks]

b) Explain how **one of these aspects of digital security would help address the focus group's concern around loss of privacy.**

[2 marks]

AO1 = 2 marks
AO2 = 2 marks

a) Award **one** (AO1) mark for **each** description of the provided aspects of digital security, up to a maximum of **two** marks. For example:

- a digital footprint is action that is traceable on the internet / digital devices (1)
- surveillance is the monitoring of activity / behaviour / information (1).

Accept any other suitable response.

b) Award **one** (AO2) mark for **each** explanation point of a way that digital security would help address the focus group's concern around loss of privacy, up to a maximum of **two** marks. For example:

- as the devices are marketed as 'easy-to-use', the company should also make it easy and intuitive for the users of its devices to remove any personal information (1), such as browsing history or personal preferences. There should be clear instructions provided in a variety of formats to users when they purchase the devices and this could be made part of the marketing message (1)
- as the focus group are worried about privacy, it should be made clear when purchasing devices what data the company will collect about the user and their usage, and why this data needs to be collected (1). Users should be given clear options to opt out of any monitoring of their activity and given clear instructions on how to do this (1).

Accept any other suitable response.

5	A cloud-based service provider is launching a new product. A previous launch was not as successful as the provider had hoped. Feedback from staff indicated that they were not sure what was expected of them and were not provided with targets to aim for. **a) Identify** two **components of SMARTER objectives.** [2 marks] **b) Explain how** one **of the identified components of SMARTER objectives can improve the provider's chances of a successful launch.** [2 marks]

AO1 = 2 marks
AO2 = 2 marks

a) Award **one** (AO1) mark for **each** component of SMARTER objectives identified, up to a maximum of **two** marks, for example:

- Specific (1)
- Measurable (1)
- Achievable (1)
- Realistic (1)
- Time-bound (1)
- Evaluate (1)
- Re-evaluate (1).

b) Award **one** (AO2) mark for **each** explanation point of how **one** of the identified aspects of SMARTER objectives can improve the provider's chances of a successful launch. For example:

- specific targets can be set so that members of the team are clear on what is expected of them in this product launch (1), resulting in a more productive and informed team ensuring that requirements of the project are met (1)
- measurable targets can be used to enable performance of the product launch to be monitored (1), which can help the company to offer early feedback to staff about their performance (1)
- realistic targets can be used so that staff can fulfil targets that have been set for them (1). This can ensure that the team are motivated to work towards the successful launch, and can improve morale and teamwork (1).

Accept any other suitable response.

6	A training provider is moving from classroom-based to online teaching. In preparation, they are developing a virtual classroom platform. The managing director is holding a meeting with the development team. The focus of the meeting is to understand the risks and implications that the new platform has for the business. The meeting will focus on the following risks: • security • audience exclusion • insufficient business resilience. **Explain how** one **of these risks could affect the new online classroom platform.** [2 marks]

AO2 = 2 marks

Award **one** mark for **each** explanation point of **one** risk that could affect the new online classroom platform, up to a maximum of **two** marks. For example:

- if the security of the new online classroom platform is not sufficient it could be open to misuse by unauthorised users (1). This would impact the effectiveness of the sessions and lead to unhappy learners / staff (1)
- if the platform has not been designed to consider the staff or learners who will be using it, then they may risk audience exclusion (1). This may result in a lack of engagement by staff or learners who are not as comfortable or familiar with digital systems (1)
- if the training provider does not have business resilience or the ability to quickly adapt to any disruptions of service, the online learning platform may have an outage (1), making the learning materials inaccessible to learners and staff (1).

Accept any other suitable response.

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7   **An organisation is planning its long-term growth strategy and wants to become more environmentally aware, while also reducing the costs of their operations.**

The organisation offers remote, 24/7 digital support to people with little IT experience. Moving to more eco-friendly working means that the organisation will need to change their digital infrastructure to include more power-efficient components.

Explain why each **of the following factors should be considered when planning the new growth strategy:**

- **sustainability**
- **reduction in carbon footprint.**

[4 marks]

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AO2 = 4 marks

Award **one** mark for **each** explanation point of **each** factor considered when planning the new growth strategy, up to a maximum of **four** marks. For example:

- considering sustainability as part of the long-term growth strategy would allow the organisation to identify the negative environmental impact resulting from their operations (1). By introducing power-efficient components, they would reduce the amount of energy they use (1)
- as the digital support being offered is a 24/7 service, consideration would need to be given to the carbon footprint being generated by the organisation (1). To include this in the long-term growth plan would mean considering the availability of their services / reducing the emissions by turning off devices that are not in use / using sensor-activated lighting (1).

Accept any other suitable response.

8	Tanveer is a specialist fashion retailer who is planning to open a new online store. He has hired a new web design apprentice who will create and manage the online store. Tanveer has warned the apprentice that there are risks to online businesses that need to be considered.
	Discuss how the risk of non-compliance could have an impact on Tanveer's business.
	[3 marks]

AO3 = 3 marks

Award **one** mark for **each** discussion point about how the risk of non-compliance could have an impact on Tanveer's business, up to a maximum of **three** marks.

- if the online store did not meet compliance regulations through policies, procedures and legislation, such as around handling card payments or storing and processing personal data (1), there would be implications such as risk of lawsuits / fines / loss of business / reduction in sales (1). This could impact on the reputation of Tanveer's business / damage his brand as a specialist in fashion retail / impact on the company's ability to be profitable (1).

Accept any other suitable response.

9	A software development company is developing a new social networking app that aims to connect users doing specific leisure activities across the world. The organisation has a reputation for developing products that are accessible to all.
	The project manager would like to ensure that the team understand the importance of considering customer and end user needs when creating a successful app.
	Justify why it is important for the software development company to consider the profile of their customers and end users when developing their product.
	[6 marks]

AO3 = 6 marks

Award **one** mark for **each** justification of why it is important for the software development company to consider the profile of their customers and end users for their product, up to a maximum of **six** marks. For example:

- consideration of customer / end user profiles could ensure that the app is fit for purpose, accessible and inclusive (1). It would be important for developers to use the profile to gain an understanding of the end users to understand the customer demographics, behaviour patterns, motivations and goals that will drive these people to use a social networking leisure app (1). It will allow developers to gain an understanding of the skill levels of the users and influence the structure / interface / terminology used within the design of the app (1). As the company has a strong reputation for developing products

that are accessible to all, they should use the profiles to gain an understanding of the different platforms being used to ensure that the product is cross-platform compatible (1). Developers should take into account the demographics and behaviours of their customers / end users to make sure that the product is inclusive and that no users are excluded due to bias or their usage behaviours (1). Developers need to be aware of the age of their customers / end users and make sure that content is developed in line with regulatory requirements such as age restrictions so that content is suitable / appropriate (1).

Accept any other suitable response.

10	BuildSkills UK is a charity that provides free digital skills training to adults who are not in education, employment or training (NEET). The managing director wants to know about factors that may influence the business environment in order to create a successful 10-year business plan. Discuss key factors that could influence the business environment of BuildSkills UK and the opportunities offered by each. Your response must include reasoned judgements and conclusions. [12 marks, plus 3 marks for QWC]

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

Band	Marks	Descriptor
4	10–12	**AO3** Discussion of factors that can influence the business environment and opportunities they may provide is **comprehensive, effective** and **relevant**, showing **detailed** understanding and **logical** and **coherent** chains of reasoning throughout. The answer demonstrates informed conclusions that are fully supported with rational and balanced judgements. **AO2** Applied all relevant knowledge of factors that can influence the business environment and shows a **detailed** functional understanding of the opportunities that factors may provide. **AO1** A **wide range** of relevant knowledge and understanding of factors that can influence the business environment and opportunities they may provide is **accurate** and **detailed**. The answer demonstrates **comprehensive** breadth and / or depth of understanding.
3	7–9	**AO3** Discussion of factors that can influence the business environment and the opportunities they may provide is **in most parts effective**

		and **mostly relevant**, showing **mostly logical** and **coherent** chains of reasoning throughout. Given conclusions are fully supported by judgements that consider most of the relevant arguments. **AO2** Applied **mostly relevant** knowledge of factors that can influence the business environment related to the context (long-term planning), showing **some** functional understanding of the opportunities they may provide. **AO1** Knowledge and understanding of factors that can influence the business environment and the opportunities they may provide is **in most part 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 factors that can influence the business environment and the opportunities they may provide is in **some parts effective** and of **some relevance**, with some understanding and reasoning taking the form of **generic statements** with some development. Given conclusions are brief and supported by judgements that consider only the most basic arguments. **AO2** Applied some, but limited, knowledge of factors that can influence the business environment related to the context (long-term planning), and may show a lack of functional understanding of the opportunities they may provide. **AO1** Knowledge and understanding of factors that can influence the business environment and the opportunities they may provide 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 factors that can influence the business environment and the opportunities they may provide 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 of factors that can influence the business environment and the opportunities they may provide but with little relevance to the context (long-term planning).

		AO1 Knowledge and understanding of factors that can influence the business environment and the opportunities they may provide shows very **minimal** accuracy, focus and relevance. The answer has **isolated** points, showing **very minimal** breadth and/or depth of understanding, with **significant** inaccuracies and omissions.
	0	No creditworthy material.

Quality of written communication (QWC) = 3 marks

Marks	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 are 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 are 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 are 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

Examiners are reminded that the 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.

AO1: The student will evidence knowledge and understanding of the key factors that could influence the business environment of BuildSkills UK which may include:

- political factors (for example, cross-party focus and agendas)
- economic factors (for example, interest rates, consumer trends, periods of recession)
- social factors (for example, social mobility, market trends, cultural expectations, socioeconomic aspects)
- technological factors (for example, emerging technologies)
- legal factors (for example, legislation changes and updates)
- environmental factors (for example, carbon footprints, digital waste)

AO2: The student will apply general knowledge of the opportunities offered by each key factor that could influence the business environment relating to the context

and

AO3 The student will evidence discussion of the key factors that could influence the business environment of BuildSkills UK and the opportunities offered by each to include chains of reasoning which may include:

A factor that BuildSkills UK should consider could be political factors that may influence the business environment that the charity operates within. A change in the ruling political party could impact on the viability of the business, as priorities may change. This could mean that funding for such training could be of less importance. Due to the nature of the training that the charity offers, it is more likely that this area is a cross-party focus. This could lead to opportunities for more funding for the charity as new initiatives are rolled out.

As the charity works in the digital sector, it must be considered that the emergence and development of technologies has a big impact on the business. Over the 10-year period there will likely be new devices or systems that people who are not in education or training will need training in. This is likely to bring further opportunities, but will also require BuildSkills UK to be informed and able to train people on the latest technology and systems.

The charity must keep in mind legal factors, such as new and emerging legislation that could impact its activities. It is likely that the charity would store and process personal information of customers to better support them in to work opportunities, and they must ensure the legislation is complied with when doing this. Not doing so correctly could lead to reputational damage of the business and even legal issues which could be very costly. Either of these impacts could put the long-term future of the business at stake.

BuildSkills UK must consider its environmental impact. With many targets now set at national level for companies to reduce their impact, the charity could consider where it can cut its own footprint. This could mean moving to online learning methods to reduce the impact from travel and save on energy usage. Reducing their environmental impact would allow BuildSkills UK to promote this to potential learners and customers that they work with. This can make a business more attractive to a range of stakeholders, which could see an increase in activity.

Section B: Diversity, inclusion and digital environments   **Total for this section: [39 marks]**
[plus 3 marks for QWC]

11	**Identify** one **adverse effect on an individual when digital inclusion principles are not applied.**
	[1 mark]

AO1 = 1 mark

Award **one** mark for identification of an adverse effect on an individual. For example:

- reduced quality of life (1)
- social isolation (1)
- restriction in services (1)
- financial loss (1).

Accept any other suitable response.

12	**State** two **types of network.**
	[2 marks]

AO1 = 2 marks

Award **one** mark for a network stated, up to a maximum of **two** marks. For example:

- personal area network / PAN (1)
- local area network / LAN (1)
- metropolitan area network / MAN (1)
- wide area network / WAN (1)
- virtual private network / VPN (1).

Accept any other suitable response.

13	Natalia runs an IT support company and has recently seen productivity reduce amongst staff.
	Staff have told Natalia that they could work faster, but the systems they use are so slow that this is not possible.
	Natalia would like to provide a more resilient digital environment to ensure system performance is always effective.
	a) Identify two methods of creating a resilient digital environment that Natalia could use.
	[2 marks]
	b) Explain how Natalia could use one of the identified methods to create a resilient digital environment.
	[2 marks]

AO1 = 2 marks
AO2 = 2 marks

a) Award **one** (AO1) mark for **each** identified method, up to a maximum of **two** marks. For example:

- installation of software updates / upgrades (1)
- replacement and removal of hardware (1)
- adding redundancy to systems (1)
- decommissioning and removing legacy hardware and software (1)
- device hardening (1)
- maintaining effective back-up systems (1).

Accept any other suitable response.

b) Award **one** (AO2) mark for **each** explanation point of how Natalia could use one of the identified methods to create a resilient digital environment, up to a maximum of **two** marks. For example:

- by ensuring that software is updated on a regular basis, Natalia could ensure that the digital environment is running to maximum performance (1), which would mean that staff could run more than one software application at a time without experiencing loss of time/productivity (1)
- by removing old hardware and replacing it with new hardware, the system performance would be improved (1), which would benefit Natalia as working practice would be made more efficient with less downtime (1).

Accept any other suitable response.

14	AppMyLife is a mobile app developer specialising in apps that help users organise their work-life balance. Over recent years, AppMyLife has suffered from reduced sales and a shrinking user base among people from diverse backgrounds. The board of directors is looking at the business benefits of increased diversity and inclusion in the workforce. Explain how increased diversity and inclusion within the workforce could support AppMyLife to introduce products that are: • **innovative** • **inclusive.** [4 marks]

AO2 = 4 marks

Award **one** mark for **each** explanation point of how increased diversity and inclusion in the workforce could support AppMyLife to introduce **innovative** products, up to a maximum of **two** marks. For example:

- by introducing more diversity and inclusion into the workforce by recruiting staff from a diverse range of backgrounds, the company would have a more varied input into the design and development of their products (1). This would lead to increased innovation levels in products and products that appeal to a wider audience, thereby increasing sales (1).

Award **one** mark for **each** explanation point of how increased diversity and inclusion in the workforce could support AppMyLife to introduce **inclusive** products, up to a maximum of **two** marks. For example:

- increasing diversity and inclusion within the workforce would likely see an improved link with minority groups in the community that has clearly been lost by the company (1). The inclusivity of products would improve the company's reputation within the user base of people from diverse backgrounds (1).

Accept any other suitable response.

15	Muhammed is presenting at a conference for software development and design companies. Muhammed's presentation will focus on addressing the demographic imbalance in the digital sector. Muhammed will present on the following approaches to addressing this imbalance: • **increasing cultural awareness of different types of bias** • **application of digital inclusion principles** • **government initiatives** • **inclusive recruitment.** **Explain how** two **of these approaches can help hiring managers to address demographic imbalance in the digital sector.** [4 marks]

AO2 = 4 marks

Award **one** mark for **each** explanation point of how **each** approach selected can address the demographic imbalance, up to a maximum of **four** marks. For example:

- increased cultural awareness of types of bias that impact people working in the digital sector should lead to better responses to the challenges faced (1). Muhammed including this information in his presentation will allow hiring managers to adapt their approach to overcome this barrier (1)
- applying the principles of digital inclusion to the recruitment process may attract more people from diverse backgrounds to job vacancies (1). Muhammed should ensure this presentation contains a focus on the ways that recruitment processes can be adapted (1)
- hiring managers could utilise available government initiatives that look to address demographic imbalance in the digital sector (1). Muhammed could include information about campaigns that increase awareness of the opportunities available to women in science, technology, engineering and mathematics (STEM) roles and opportunities in the digital sector for the LGBTQ+ community (1)
- inclusive recruitment could attract a more diverse range of people to work in the industry (1). Muhammed can include in his presentation the idea that more diversity may bring more ideas and even better understanding of the issues (1).

Accept any other suitable response.

16	A local college wants to improve the accessibility of its learning materials. To help achieve this, the principal has asked that the college provides all students with access to word processing, spreadsheet and database software. The principal would like to use cloud services to achieve this but is not sure about the service that is required.
	Discuss how software as a service (SaaS) could improve the accessibility of the college's learning materials.
	[3 marks]

AO3 = 3 marks

Award **one** (AO3) mark for **each** discussion point about how software as a service (SaaS) could benefit the college, up to a maximum of **three** marks. For example:

- software as a service (SaaS) could improve accessibility by allowing students to be able to download and install the software they need to work on projects and assignments related to their learning (1). Students would benefit as they would be able to use the software on a range of their own devices, including smartphones, tablets, and computers, with no additional management required from the college (1). SaaS would ensure that both the college and the students have the same software without any additional costs, as these would likely be paid for monthly and would be fixed, allowing the college to manage their budget on this project (1).

Accept any other suitable response.

17	A conference centre is hosting a conference to promote collaborative working between large businesses in the UK. It is expected that there will be over 200 attendees and several businesses will exhibit their own products. Feedback from last year's event was that the centre's network was restrictive and did not allow attendees to collaborate effectively.
	a) Identify one routing protocol.
	[1 mark]
	b) Explain how the routing protocol identified could be used by the conference centre.
	[2 marks]

AO1 = 1 mark
AO2 = 2 marks

a) Award **one** (AO1) mark for an identified routing protocol:

- the routing information protocol / RIP (1)
- the open shortest path first protocol / OSPF (1).

b) Award **one** (AO2) mark for **each** explanation point of how the identified routing protocol could be used by the conference centre, up to a maximum of **two** marks. For example:

- the routing information protocol (RIP) is a protocol where routers get to know the configuration information of other routers that they are connected to, in order to enable them to pass on network packets to other routers, allowing communication across the conference centre network (1). For attendees of the conference this could provide a network infrastructure that may not be fully up-to-date and could limit the ability for collaboration (1)
- the open shortest path first (OSPF) protocol would ensure communication across the conference centre network as it would allow routers to be able to understand exactly which devices are connected to the network (1). With so many attendees, and the devices that they are likely to bring, OSPF would be able to keep up with the changes that will occur on the network (1).

Accept any other suitable response.

18	Marco has purchased a new laptop for work projects. The laptop has no operating system (OS) installed. Marco is a graphic designer and uses popular software packages including word processing, image editing and video creation. Projects are often shared with clients, so compatibility of software is a key requirement.
	Justify which OS is the most suitable for Marco to install on his laptop.
	[3 marks]

AO3 = 3 marks

Award one mark for **each** justification point of the suitability of operating system types, up to a maximum of **three** marks. For example:

- an open source OS may be suitable for expert users who understand how to use them. More information would be needed to know which applications would be required before Marco can confirm if this is a suitable option (1). A network OS would not be a suitable option. While it would likely work with the applications Marco requires, a network OS is built for supporting network services, rather than delivering high performance for one user. They are also a lot more expensive than the other options (1). Installing a proprietary OS such as Microsoft Windows would be the most suitable option for the laptop. Microsoft Windows is compatible with most software and will allow Marco to complete projects and be confident his clients will receive them in a format that works (1).

Accept any other suitable response.

19	A large technology company is developing a new product. They have asked a community group with a range of needs to tell them more about their requirements.
	The company is aware of the importance of considering digital inclusion in the design and development of digital products.
	Analyse why the principles of digital inclusion are important when developing this new product for this group.
	[3 marks]

AO3 = 3 marks

Award **one** mark for **each** analysis point of why the principles of digital inclusion are important when developing this new product for people with a range of needs, up to a maximum of **three** marks.

- ensuring no one is disadvantaged by the digital product is important to ensure that all of the users within the community group can access and use it, for example consideration of the colour schemes that are used to ensure they are appropriate / adjustable for users with colour blindness (1). The technology company must consider the technical knowledge and skill levels of users. Depending on the product being created, technology companies should ensure that it is easy to use. For example, those who work in digital support services may be comfortable using a digital product with little instruction, while others may require extensive documentation and guidance (1). The technology company will need to develop the digital product that is designed with realistic access requirements in mind as the internet connection speeds may vary between users within the group. Systems should be designed to allow for users within the community group with slow internet connections to be able to use the digital products and not just cater to those with fast fibre connections (1).

Accept any other suitable response.

20	VirtualNet UK Ltd is an organisation that offers hosted applications to clients. Their clients are mainly small companies that want to offer digital solutions but who do not have the knowledge or ability to implement them.
	A recent outage at the data centre caused systems to be down for VirtualNet UK Ltd and their clients. This led to several complaints from clients about lost revenue and security concerns.
	The network manager has requested an increased budget to improve the resilience of the organisation's digital environment.
	Discuss the benefits of improved resilience in the digital environment to VirtualNet UK Ltd and the impact these improvements could have on clients.
	Your response must include reasoned judgements and conclusions.
	[12 marks, plus 3 marks for QWC]

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

Band	Marks	Descriptor
4	10–12	**AO3** Discussion of benefits of improved resilience in the digital environment and the impact this may have on clients is **comprehensive**, **effective**, and **relevant**, showing **detailed** understanding and **logical** and **coherent** chains of reasoning throughout. The answer demonstrates informed conclusions that are fully supported with rational and balanced judgements. **AO2** Applied **all relevant** benefits of improved resilience in the digital environment and shows a **detailed** functional understanding of potential impacts on clients. **AO1** A **wide range** of relevant knowledge and understanding of benefits of improved resilience in the digital environment and the impact they may have on clients is **accurate** and **detailed**. The answer demonstrates **comprehensive** breadth and / or depth of understanding.
3	7–9	**AO3** Discussion of improved resilience in the digital environment and the impact this may have on clients is **in most parts effective** and **mostly relevant**, showing **mostly logical** and **coherent** chains of reasoning throughout. Given conclusions are fully supported by judgements that consider most of the relevant arguments. **AO2** Applied **mostly relevant** knowledge of improved resilience in the digital environment related to the context (improving network resilience), showing **some** functional understanding of the impact this may have on clients. **AO1** Knowledge and understanding of improved resilience in the digital environment and the impact this may have on clients is **in most part 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 improved resilience in the digital environment and the impact this may have on clients 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 are supported by judgements that consider only the most basic arguments. **AO2**

		Applied **some** but limited knowledge of improved resilience in the digital environment related to the context (increased network resilience) and may show **a lack of** functional understanding of the impact this may have on clients. **AO1** Knowledge and understanding of improved resilience in the digital environment and the impact this may have on clients shows 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 improved resilience in the digital environment and the impact this may have on clients 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 of improved resilience in the digital environment but with **little** relevance to the context (increased network resilience). **AO1** Knowledge and understanding of improved resilience in the digital environment and the impact this may have on clients shows very **minimal** accuracy, focus and relevance. The answer has **isolated** points, showing **very minimal** breadth and / or depth of understanding, with **significant** inaccuracies and omissions.
	0	No creditworthy material.

Quality of written communication (QWC) = 3 marks

Marks	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 are 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 are 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 are 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

Examiners are reminded that the 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.

AO1: The student will evidence knowledge and understanding of the benefits of improved resilience in the digital environment to VirtualNet UK Ltd which may include:

- increased security (secure transfer of data, secure storage of data, reduced system vulnerabilities, reduced probability of targeted cyberattacks)
- increased reputation and profile (customer confidence, protection of brand image)
- lower downtime of services.

AO2: The student will apply general knowledge of the benefits of improved resilience in the digital environment to VirtualNet UK Ltd relating to the context

and

AO3 The student will evidence discussion of the benefits of improved resilience in the digital environment to VirtualNet UK Ltd and the impact these improvements could have on clients, to include chains of reasoning which may include:

Improving the resilience of the VirtualNet UK Ltd network would provide increased security of data that is transferred across the network and stored. This could be used by the organisation as a unique selling point with clients, as it would help make the solutions provided more attractive. Clients could feel the benefit of knowing that their data is secure within the provided system. Given that clients often have little technical knowledge, this is an important part of the provided service.

A more resilient network would provide VirtualNet UK Ltd with a system that is less vulnerable to attacks. More resilience would mean more safeguards are in place to identify and stop attacks to the network. This can have a positive impact for clients as the provided services would be less likely to be impacted by cyberattacks, providing a more secure system for its customers.

Being able to promote a more resilient network would allow for VirtualNet UK Ltd to promote this as part of their brand. This could increase their brand image and customer confidence in the company. Clients could feel a benefit of this too, by promoting to their customers that they use such secure systems. As VirtualNet UK Ltd's reputation grows, this may allow their clients to build more confidence from their own customers in the systems they provide.

A more resilient network should ensure that there is less downtime experienced by the systems that VirtualNet UK Ltd provides. It is likely that more resilient systems will include back-up systems and redundancy which will minimise downtime in the event of issues. This will have a positive impact onto clients as they can be confident that their systems remain operational for close to 100% of the time, meaning reduced lost sales opportunities due to offline systems.

Section C: Learning and planning   **Total for this section: [22 marks]**

21	**Give** two **factors that need to be considered when assessing the reliability and validity of a source.**
	[2 marks]

AO1 = 2 marks

Award **one** mark for **each** reliability and validity factor given, up to a maximum of **two** marks.
For example:

- author expertise (1)
- bias (1)
- evidence (1)
- subjectivity (1)
- context (1)
- intended audience (1)
- date of publication (1)
- corroboration of sources (1)
- citations (1).

Accept any other suitable response.

22	**Roma is researching language development for a university paper. The topic is new to Roma, and she would like to use digital sources of knowledge for her research.**
	Explain how Roma could ensure that any research she takes from forums is accurate, reliable and valid.
	[2 marks]

AO2 = 2 marks

Award **one** mark for **each** explanation point of how Roma could ensure that any research she takes from forums is accurate, reliable and valid, up to a maximum of **two** marks. For example:

- Roma should ensure that she uses forums that are respected within the profession and that have contributors who bring their specific author expertise to discussions around language development (1). Roma should ensure that she fact-checks any shared information that she takes from the forum to ensure the validity of the content (1).

Accept any other suitable response.

23	Jack is a freelance software developer working on a rapid application development (RAD) project that will allow customers to order limited edition products from their smart device.
	a) Identify two **potential consequences of ineffective project planning on the project.**
	[2 marks]
	b) Explain how one **of the identified consequences of ineffective project planning could have an impact on the software development project.**
	[2 marks]

AO1 = 2 marks
AO2 = 2 marks

a) Award **one** (AO1) mark for identifying a consequence of ineffective project planning, up to a maximum of **two** marks. For example:

- under-resourced (1)
- escalating costs (1)
- exceeding timeframes (1)
- unable to deliver outcomes (1)
- scope creep (1).

Accept any other suitable response.

b) Award **one** (AO2) mark for **each** explanation point of how **one** of the identified consequences of ineffective project planning could have an impact on the software development project, up to a maximum of **two** marks. For example:

- exceeding timeframes could be a consequence of ineffective project planning. As the project is a rapid application development project it therefore needs to be completed within the timeframe agreed (1). If the project was to suffer from exceeding timescales, then Jack is unlikely to be able to deliver the project on time, causing him to lose out on future business opportunities (1)
- escalating costs could be a consequence of ineffective project planning if an initial, realistic budget is not set (1). As a freelance developer Jack is unlikely to have the contingency funds required to complete the project (1).

Accept any other suitable response.

24	Mia is developing a new digital platform for a local educational charity that will launch at the start of the new school year. The project is early in the planning stage and Mia is looking to understand the aims and objectives. a) **State** two **considerations in the identification of project aims and objectives.** [2 marks] b) **Explain how Mia can use** one **of these considerations to understand the aims and objectives of the project.** [2 marks]

AO1 = 2 marks
AO2 = 2 marks

a) Award **one** (AO1) mark for **each** consideration stated, up to a maximum of **two** marks. For example:

- project scope - user / client requirements / business case* (1)
- expected outcomes (1)
- stakeholder map (1)
- timeline and deadlines (1)
- linked to organisational strategic objectives (1).

* Students can be awarded up to a maximum of **one** mark for stating either project scope or **one of** user, client requirements or business case.

Accept any other suitable response

b) Award **one** (AO2) mark for **each** explanation point of how Mia could use **one** of the identified considerations to understand the aims and objectives of the project, up to a maximum of **two** marks. For example:

- understanding the charity's requirements for the digital platform could help Mia to scope the project more effectively in order to manage the charity's expectations (1) and agree the outcomes in order to measure the feasibility of the project (1)
- understanding any timelines and deadlines of the project will allow Mia to plan each phase of the development, identifying actions and dependencies (1), allowing Mia to monitor progress / amend timescales as the project progresses to ensure that the final project is delivered to the charity on time for the start of the new school year (1).

Accept any other suitable response.

| 25 | Chloe would like to use emerging technologies to automate her home, improve her fitness and manage her daily routine.

a) Identify two **examples of emerging technologies that Chloe could use.**
<div align="right">[2 marks]</div>
b) Explain how Chloe could use one **of the identified emerging technologies to meet her needs.**
<div align="right">[2 marks]</div> |

AO1 = 2 marks
AO2 = 2 marks

a) Award **one** (AO1) mark for **each** example of an emerging technology that Chloe could use, up to a maximum of **two** marks. For example:

- internet of things (1)
- artificial intelligence (1)
- extended reality / augmented reality / virtual reality / mixed reality (1).

Accept any other suitable response, including any abbreviations (such as IoT).

b) Award **one** (AO2) mark for **each** explanation point of how Chloe could use **one** of the identified emerging technologies, up to a maximum of **two** marks. For example:

- by using wearable IoT technology, Chloe would be able to measure her activity levels or biometrics (1), and then track them against personal goals that she could set for herself to improve her fitness levels (1)
- Chloe could use AI to create a smart home by connecting her electronic devices (1). This would enable her to set routines such as turning the lights on and off or setting reminders (1)
- Chloe could use mixed reality to improve her fitness levels by using virtual exercise apps combined with physical exercise equipment (1). The apps would allow Chloe to experience an individual activity in a group dynamic (1).

Accept any other suitable response.

26	A careers adviser within a school is planning a lecture for students to discuss the importance of personal and professional development in the digital sector.
	Discuss how achieving accreditation to specific professional disciplines could have an impact on a student's career.
	[3 marks]

AO3 = 3 marks

Award **one** mark for **each** discussion point of how achieving accreditation to specific professional disciplines could have an impact on a student's career, up to a maximum of **three** marks. For example:

- holding certification from known vendors such as Microsoft / Cisco would show the student has a high level of understanding in the sector area (1). It would also give the student a deeper confidence in their ability to progress further in their development (1), which could lead to recognition by employers in the sector (1).

Accept any other suitable response.

27	A local college is designing a new distance learning solution to allow students to learn from home. The project has a tight deadline and several requirements, and the project manager is worried that the team may lose focus on delivering a minimum working solution.
	Assess how MoSCoW could be used to prioritise the requirements for this project.
	[3 marks]

AO3 = 3 marks

Award **one** mark for **each** assessment point of how MoSCoW could be used to prioritise the requirements for this project, up to a maximum of **three** marks. For example:

- the MoSCoW technique would be used to prioritise the requirements by identifying the must haves, should haves, could haves, and won't haves so that the focus remains on delivering a minimal viable product (1). By focusing on the must have and should have requirements, the team will allocate resource appropriately / effectively to meet the tight deadline (1). If the project team did not use MoSCoW, they could waste time focusing on the could have or won't have requirements, and then fail to design a solution that will allow the students to learn from home (1).

- Accept any other suitable response.

Assessment Objective Grid

Section A: Business context and culture

Question number	AO1	AO2	AO3	Total
1	1			1
2	1			1
3		2		2
4	2	2		4
5	2	2		4
6		2		2
7		4		4
8			3	3
9			6	6
10	4	4	4	12 (3)
Totals	**10**	**16**	**13**	**39**

Section B: Diversity, inclusion and digital environments

Question number	AO1	AO2	AO3	Total
11	1			1
12	2			2
13	2	2		4
14		4		4
15		4		4
16			3	3
17	1	2		3
18			3	3
19			3	3
20	4	4	4	12 (3)
Total	**10**	**16**	**13**	**39**

Section C: Learning and planning

Question number	AO1	AO2	AO3	Total
21	2			2
22		2		2
23	2	2		4

24	2	2		4
25	2	2		4
26			3	3
27			3	3
Total	**8**	**8**	**6**	**22**

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