

T Level Technical Qualification in Digital Production, Design and Development

Mark Scheme (Results)

Summer 2023

Paper 2: The Business Environment

General Marking Guidance

- All learners must receive the same treatment. Examiners must mark the first learner in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Learners must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved. Examiners should also be prepared to award zero marks if the learner's response is not rewardable according to the mark scheme.
- Where judgement is required, a mark scheme will provide the principles by which marks will be awarded.
- When examiners are in doubt regarding the application of the mark scheme to a learner's response, a senior examiner should be consulted.
- Crossed out work should be marked unless the learner has replaced it with an alternative response.
- Accept incorrect/phonetic spelling (as long as the term is recognisable) unless instructed otherwise.

Points-Based Mark Scheme Guidance

Points-based mark schemes are made up of:

1. Mark scheme rubric
A mark scheme rubric instructs an examiner as to how each mark is awarded.
2. Example Responses
These demonstrate the type of acceptable responses that a student might provide and where each mark is awarded.
3. Additional marking Guidance
This informs examiners about any parameters which should be applied e.g., 'accept any other appropriate/alternative responses'.

Applying the points-based mark scheme guidance

Examiners should follow the mark scheme rubric and use the example responses as a guide for the relevance and expectation of the responses. Students must be credited for any appropriate response. Should candidates provide answers that meet the rubric but in an alternative order, credit should be given.

Levels-Based Mark Scheme Guidance

Levels-based mark schemes (LBMS) have been designed to assess students' work holistically. They consist of two parts:

1. Indicative content

Indicative content reflects content-related points that a student might make but is not an exhaustive list. Nor is it a model answer. Students may make 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 appropriate response.

2. Levels-based descriptors

Each level is made up of a number of traits which when combined together articulate the quality of response that a student needs to demonstrate. The traits progress across the levels to demonstrate the different expectations of each level. When using a levels-based mark scheme, the 'best fit' approach should be used.

Applying the levels-based descriptors

Examiners should take a 'best fit' approach to determining the mark.

- Examiners should first make a holistic judgement on which level most closely matches the student's response. Students will be placed in the level that best describes their answer. Answers can display characteristics from more than one level, and where this happens markers must use any additional guidance (e.g., weighting of traits) and their professional judgement to decide which level is most appropriate.
- The mark awarded within the level will be decided based on the quality of the answer and will be modified according to how securely all traits are displayed at that level:
 - Marks will be awarded at the top of that level if the student has evidenced each of the descriptor traits securely.
 - Where the response does not securely meet all traits, the marks should be awarded based on how closely the descriptor has been met.

Section A

Question Number	Answer	Mark									
1(a)	<p>Award one mark for each correctly labelled protocol up to a maximum of two marks.</p> <table border="1"> <thead> <tr> <th>Function</th><th></th><th>Layer</th></tr> </thead> <tbody> <tr> <td>Allows programs being used by the user to access network services</td><td>→</td><td>Application (Layer)</td></tr> <tr> <td>Decides which physical path the data should take.</td><td>→</td><td>Internet (Layer)</td></tr> </tbody> </table>	Function		Layer	Allows programs being used by the user to access network services	→	Application (Layer)	Decides which physical path the data should take.	→	Internet (Layer)	(2)
Function		Layer									
Allows programs being used by the user to access network services	→	Application (Layer)									
Decides which physical path the data should take.	→	Internet (Layer)									

Question Number	Answer	Mark
1(b)	<p>Award one mark for any of the following tools up to a maximum of two marks.</p> <ul style="list-style-type: none"> • Business intelligence software (BIS) • Financial planning software / spreadsheet • Customer relationship management (CRM) software • Database management software (DBMS) • Inventory control software • Web / social media analytics • Scheduling software <p>Accept any other appropriate response.</p> <p>Additional guidance: Answers should relate to business information and should not be related to processes.</p>	(2)

Question Number	Answer	Mark
2(a)	<p>Award one mark for each identification and one mark for an appropriate linked explanation, up to a maximum of four marks.</p> <p>Text size/screen layout/contrast/accessibility features (1) to aid doctors with additional needs e.g visual impairment (1).</p> <p>Language complexity can be high (1) as it will be used by highly educated users. (1)</p> <p>Specialist terminology can be used (1) as it is a system that has been designed for specific users. (1)</p> <p>Complexity of screen layout can be high / unique (1) as users are internal audience / be familiar with it. (1)</p> <p>Accept any other appropriate response.</p>	(4)

Question Number	Answer	Mark
2(b)	<p>Award one mark for each of the following linked points up to a maximum of four marks</p> <ul style="list-style-type: none">• Restrict access to patient records (1)• using common authorisation methods (1)• ensuring only authorised users can edit patient medical records (1)• to prevent malicious/unauthorised changes to patient data. (1) <p>Accept any other appropriate response.</p>	(4)

Question Number	Answer	Mark
3(a)	<p>Award one mark for identification of needs met, one mark for an appropriate explanation, and one mark for a further expansion of the explanation, up to a maximum of three marks.</p> <p>Appropriate functionality (1) to ensure that identified / specific needs are met (1) within one system. (1)</p> <p>Reduction of pain points (1) to mitigate problems (1) and to not hinder operations. (1)</p> <p>Accessibility (considerations) (1) to ensure that all required users (1) can use the system with minimal complications, (1)</p> <p>Compatibility (1) with existing systems (1) to ensure effective communication/transfer of data. (1)</p> <p>Availability (1) through more reliable systems (1) reducing unwanted downtime / maximising the up-time of the system. (1)</p> <p>Good user experience (1) to ensure users will continue to use the system (1) to full effect. (1)</p> <p>Cultural awareness of intended users (1) to avoid offence (1) thus restricting use. (1)</p> <p>Accept any other appropriate response.</p>	(3)

Question Number	Answer	Mark
3(b)	<p>Award one mark for identification of a characteristic, one mark for an appropriate linked explanation of that characteristic and one mark for a further expansion of the characteristic, up to a maximum of three marks.</p> <p>Number of cores (1) as increasing the number of cores (1) increase the number of instructions that can be executed at the same time (1)</p> <p>Cache size (1) as larger caches (1) require fewer read operations from main memory (1)</p> <p>Clock speed (1) as faster clock cycles (1) mean that more instructions can be executed per unit of time (1)</p> <p>CPU temperature (1) as overheating (1) causes CPU to slow down (1)</p> <p>Accept any other appropriate response.</p>	(3)

Question Number	Answer	Mark
3(c)	<p>Award one mark for each of the following linked points up to a maximum of three marks.</p> <ul style="list-style-type: none">• A firewall monitors traffic (1)• by examining incoming packets (1)• and filtering unwanted / suspicious packets (1)• using a defined set of security rules. (1) <p>Accept any other appropriate response.</p>	(3)

Question Number	Answer	Mark
4	<p>Award one mark for each of the following linked points up to a maximum of three marks.</p> <ul style="list-style-type: none">• Check the source address (1) not overly long or shortened (1) and confirm that it is from a known/reputable/trustworthy source. (1)• Check the grammar and punctuation (1) as many phishing emails make poor use of language (1) to filter out less vulnerable users. (1)• Check the urgency of message (1) as many phishing emails implore the recipient to act immediately (1) in order to make them act impulsively. (1)• Check that you are named in the email (1) as many phishing email use generic greetings (1) as they are sent in bulk (1) <p>Accept any other appropriate response.</p>	(3)

Question Number	Answer	Mark
5	<p>Award one mark for each of the following linked points up to a maximum of four marks.</p> <ul style="list-style-type: none">• A crisis (1)• caused by a natural disaster/terrorism. (1)• A zero day vulnerability (1)• leading to an exploitation of unforeseen weakness /cyber-attack. (1)• System error (1)• leading to corruption of data. (1)• System failure (1)• caused by faulty hardware or software. (1) <p>Accept any other appropriate response.</p>	(4)

Question Number	Answer	Mark
6	<p>Award one mark for identification of the reason, one mark for an appropriate linked explanation of the reason and one mark for a further expansion of the explanation, up to a maximum of three marks.</p> <p>To protect trade secrets (1) such as innovative features / specifications/ new technologies (1) from being leaked to competitors. (1)</p> <p>Accept any other appropriate response.</p>	(3)

Question Number	Answer	Mark
7	<p>Learners might refer to some/all of the following in their responses, but learners should be rewarded for other pertinent contextualised answers:</p> <p>The evaluation may include:</p> <p>Benefits of managing access</p> <p>Access to data is restricted to authorised and relevant parties. This means that it is possible to identify who is accessing data, via the use of user logs. This would allow for traceability in the case of misuse of data. If authorised staff are adequately trained then the risk of accidental deletion is also minimised.</p> <p>Access methods, such as permissions, can also be easily modified if an individual's role changes, this is also true if a member of staff leaves the company.</p> <p>Using access methods also aids with compliance of legal requirements such as data protection laws.</p> <p>Drawbacks</p> <p>In a large organisation, where access control is managed centrally permissions to access data may be allocated too slowly to allow an individual in a new role to work effectively immediately.</p> <p>In addition, if multiple methods of access control are used then these can conflict and either prevent access to authorised users or allow access to unauthorised users.</p>	

	Conclusion The use of access control methods is beneficial to organizations as these methods protect data, which may be of a sensitive nature and therefore comply with legislation and organisational objectives.	(9)
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Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-3	<ul style="list-style-type: none"> • Demonstrates a basic analysis of the situation by superficially breaking down the different aspects into component parts (AO3a) • Demonstrates basic application of knowledge and understanding that is partially relevant to the context of the question (AO2) • Demonstrates a basic evaluation which partially considers different factors/events and competing points, leading to a conclusion which is superficial or unsupported (AO3b)
Level 2	4-6	<ul style="list-style-type: none"> • Demonstrates a good analysis of the situation by breaking down the different aspects into component parts (AO3a) • Demonstrates good application of knowledge and understanding that is relevant to the context of the question (AO2) • Demonstrates a good evaluation which considers different factors/events and competing points, leading to a conclusion which is partially supported (AO3b)
Level 3	7-9	<ul style="list-style-type: none"> • Demonstrates a thorough analysis of the situation by comprehensively breaking down the different aspects into their component parts (AO3a) • Demonstrates comprehensive application of knowledge and understanding that is consistently relevant to the context of the question (AO2) • Demonstrates a thorough evaluation which comprehensively considers different factors/events and competing points, leading to a conclusion which is well supported (AO3b)

Section B

Question Number	Answer	Mark
8(a)	<p>Award one mark for identification of a reason and one mark for an appropriate linked explanation, up to a maximum of four marks.</p> <p>Multiple operating systems can be run on one machine (1) so that emulation of software platforms is possible. (1)</p> <p>CPU's can be emulated (1) so that the game can be tested on different hardware platforms. (1)</p> <p>Any crashes that occur are restricted to the virtual machine (1) leaving the host unharmed. (1)</p> <p>Any viruses (in 3rd party code) (1) do not harm the host machine. (1)</p> <p>Accept any other appropriate response.</p>	(4)

Question Number	Answer	Mark
8(b)	<p>Award one mark for identification of a reason and one mark for an appropriate linked explanation, up to a maximum of four marks.</p> <p>Poor communication (1) can result in another team not fully understanding what is required from them. (1)</p> <p>Poor programming practices (1) could result in more time spent tracing/rectifying errors. (1)</p> <p>Tasks could be mis-scheduled (1) with not enough time for completion at differing stages. (1)</p> <p>Accept any other appropriate response.</p>	(4)

Question Number	Answer	Mark
8(c)	<p>Award one mark for each of the following linked points up to a maximum of two marks</p> <p>The location of the system (1) could allow for damage to hardware / unauthorised access. (1)</p> <p>System design (1) could result in frequent hardware failure (1)</p> <p>Circumstance of use (1) could cause damage to hardware. (1)</p> <p>Accept any other appropriate response.</p>	(2)

Question Number	Answer	Mark
8(d)	<p>Learners might refer to some/all of the following in their responses, but learners should be rewarded for other pertinent contextualised answers:</p> <p>Discussion of project factors may cover:</p> <p>The benefits must be clearly listed to see what value they would add to Golwgda.</p> <p>The drawbacks must be clearly listed to see what cost they would cause the company.</p> <p>The risks must be identified to see potential failure points of the project.</p> <p>The constraints must be identified to see what limitations are on the project.</p> <p>The dependencies must be identified to see the relationship between different stages of project implementation.</p> <p>Reference to the context of the question</p> <ul style="list-style-type: none"> • projected sales revenue of the new console of Golwgda • competing brands • development time and cost • finite life of gaming consoles • compatibility • licensing • technological feasibility • recruitment 	(6)

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	<ul style="list-style-type: none">• Demonstrates a basic analysis of the situation by superficially breaking down the different aspects into component parts (AO3a)• Demonstrates basic application of knowledge and understanding that is partially relevant to the context of the question (AO2)
Level 2	3-4	<ul style="list-style-type: none">• Demonstrates a good analysis of the situation by breaking down the different aspects into component parts (AO3a)• Demonstrates good application of knowledge and understanding that is relevant to the context of the question (AO2)
Level 3	5-6	<ul style="list-style-type: none">• Demonstrates a thorough analysis of the situation by comprehensively breaking down the different aspects into their component parts (AO3a)• Demonstrates comprehensive application of knowledge and understanding that is consistently relevant to the context of the question (AO2)

Question Number	Answer	Mark
9(a)	<p>Award one mark for identification of a reason, one mark for an appropriate linked explanation of the reason up to a maximum of four marks.</p> <ul style="list-style-type: none">• legal change (1) brought about by a change in the law (1)• financial (1) to reduce potential losses (1)• social change (1) brought about by the increase in cashless transactions (1)• Security vulnerabilities (1) brought about by new methods of cybercrime (1)• technological obsolescence (1) due to advances in technology (1)• Offer newer services (1) to satisfy customer demand (1) <p>Accept any other appropriate response.</p>	(4)

Question Number	Answer	Mark
9(b)	<p>Award one mark for any of the following linked points up to a maximum of three marks.</p> <ul style="list-style-type: none">• Physically isolate the system (1)• from any other network (1)• restricting access to the system (1) <p>Accept any other appropriate response.</p>	(3)

Question Number	Answer	Mark
9(c)	<p>Award one mark for identification of impact, one mark for an appropriate explanation, up to a maximum of two marks.</p> <p>The bank could be liable to prosecution (1) If data were leaked. (1)</p> <p>Damage to reputation (1) which could result in loss of customers. (1)</p> <p>Accept any other appropriate response.</p>	(2)

Question Number	Indicative content:	Mark
9(d)	<p>Learners might refer to some/all of the following in their responses, but learners should be rewarded for other pertinent contextualised answers:</p> <p>What is Parallel changeover</p> <p>Both the old and new systems are used together until all issues with the new system have been resolved.</p> <p>This involves a duplication of work and can be expensive however it does provide a safety net.</p> <p>Advantages of Parallel changeover</p> <p>This allows results from the new system to be compared to the new system. This is to verify that the outcomes from the new system match the outcomes from the existing system that it replaces. Any discrepancies can be investigated, and the new system can be modified if needed. This ensures that a safety net exists, and that any catastrophic failure in the new system is not critical.</p> <p>Disadvantages of Parallel changeover</p> <p>Double the work is needed, especially if any form of manual data entry is used. Space is needed to hold both systems (although the do not need to be on the same site). Dedicated developer/testing support is needed during the parallel change to investigate any discrepancies and to decide on a course of action.</p> <p>Potential references to the scenario could include:</p> <ul style="list-style-type: none"> • Potential financial loss. • Bank would have a large supporting group. • System might not be onsite. <p>Conclusion</p> <p>This would be a suitable method of implementation for the bank, as it is likely to have many branches with enough space to host the new system as well as having access to a large team of developers/testers who could be retained during the parallel phase. This would allow a safety net period to avoid the implications that system failure could have.</p>	(9)

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-3	<ul style="list-style-type: none">• Demonstrates a basic analysis of the situation by superficially breaking down the different aspects into component parts (AO3a)• Demonstrates basic application of knowledge and understanding that is partially relevant to the context of the question (AO2)• Demonstrates a basic evaluation which partially considers different factors/events and competing points, leading to a conclusion which is superficial or unsupported (AO3b)
Level 2	4-6	<ul style="list-style-type: none">• Demonstrates a good analysis of the situation by breaking down the different aspects into component parts (AO3a)• Demonstrates good application of knowledge and understanding that is relevant to the context of the question (AO2)• Demonstrates a good evaluation which considers different factors/events and competing points, leading to a conclusion which is partially supported (AO3b)
Level 3	7-9	<ul style="list-style-type: none">• Demonstrates a thorough analysis of the situation by comprehensively breaking down the different aspects into their component parts (AO3a)• Demonstrates comprehensive application of knowledge and understanding that is consistently relevant to the context of the question (AO2)• Demonstrates a thorough evaluation which comprehensively considers different factors/events and competing points, leading to a conclusion which is well supported (AO3b)

Question Number	Answer	Mark
10(a)	<p>Award one mark for each identification of a suitable input device and one mark for each appropriate linked explanation, up to a maximum of four marks.</p> <ul style="list-style-type: none">• Camera (1) to take pictures of the property. (1)• Microphone (1) to create voice file with property details. (1)• (Digital) range finder / lidar (1) to measure size of room. (1)• Touchscreen (1) to input details into forms. (1) <p>Accept any other appropriate response.</p> <p>Also accept device that could be inbuilt into a smartphone.</p>	(4)

Question Number	Answer	Mark
10(b)	<p>Award one mark for any of the following linked points up to a maximum of three marks.</p> <ul style="list-style-type: none">• Suitable primary keys would be identified (1)• These primary key fields would become foreign key fields in the lease table to link a student to the flat they have rented (1)• Many landlords can have many flats (1)• One student can have one flat (1)• One flat can house many students (1) <p>Accept any other appropriate response.</p>	(3)

Question Number	Answer	Mark
10(c)	<p>Award one mark for explanation of data type and one mark for an appropriate linked example, up to a maximum of four marks.</p> <p>Qualitative A written description/opinions/reviews/comments about the flat (1) as this is a not a quantifiable value(1)</p> <p>Quantitative A rating/scale/rooms in the flat/monthly rent (1) as this could be expressed as a number (1)</p> <p>Accept any other appropriate response.</p>	(4)

Question Number	Answer	Mark
10(d)	<p>Award one mark for explanation of method, one mark for an appropriate linked example of search parameter and one mark identifying what could be done with search results, up to a maximum of three marks.</p> <ul style="list-style-type: none"> The student table could be searched (1) to find all students who are not in their final year (1) and then these students could be contacted with details about potential flats that they could rent in the next academic year. (1) <p>Accept any other appropriate response.</p> <p>Additional Guidance Example answer is indicative, accept other appropriate explanations of how HELD data would be used. Expected answer structure: Method (e.g. search/sort)(1) parameter (1) how used (1)</p>	(3)

Question Number	Indicative content:	Mark
10(e)	<p>Learners might refer to some/all of the following in their responses, but learners should be rewarded for other pertinent contextualised answers:</p> <p>The evaluation may include:</p> <p>Wired Networks</p> <p>This would allow for faster connection speeds, meaning that staff would spend less time waiting for information to be fetched from the server.</p> <p>These networks also tend to be more stable as they are less influenced by interference, meaning that data corruption issues during transmission would be lessened.</p> <p>Wired networks are also more secure, meaning that sensitive financial information would be less prone to hacking.</p> <p>Wired networks require more building work to install. Installation might prove more difficult due to the thick concrete walls of the building.</p> <p>Wired networks also have fixed access points which can tether users to a certain location within the office.</p> <p>Wired networks also have a fixed number of access points and if there are more people who wish to use the network than access points then problems occur.</p> <p>Wireless Networks</p> <p>Wireless networks allow users to move around the office from one desk to another, which could allow for easier collaborative working.</p> <p>Wireless networks are not constrained by the number of available physical access points and could therefore allow for more users to access the network.</p> <p>Wireless networks require less work to install and can be done in a shorter time with less disruption.</p> <p>However, the office has thick walls and would the radio signals be disrupted by these walls. These walls could also cause a degradation in network performance.</p> <p>Wireless networks are also less secure as hackers can more easily conduct an attack on the network.</p> <p><i>A conclusion can be supported within the body of the responses or as a separate identified conclusion.</i></p> <p>Possible conclusion</p> <p>Due to the nature of the building and the flexible working patterns of many of its users the company should install a wireless network. This could be installed in less time, allow for flexible seating patterns and also allow for more potential users.</p>	(12)

The 2nd trait (AO2) carries twice as much weighting as traits 1 & 3.

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-4	<ul style="list-style-type: none"> • Demonstrates a basic analysis of the situation by superficially breaking down the different aspects into component parts (AO3a) • Demonstrates basic application of knowledge and understanding that is partially relevant to the context of the question (AO2) • Demonstrates a basic evaluation which partially considers different factors/events and competing points, leading to a conclusion which is superficial or unsupported (AO3b)
Level 2	5-8	<ul style="list-style-type: none"> • Demonstrates a good analysis of the situation by breaking down the different aspects into component parts (AO3a) • Demonstrates good application of knowledge and understanding that is relevant to the context of the question (AO2) • Demonstrates a good evaluation which considers different factors/events and competing points, leading to a conclusion which is partially supported (AO3b)
Level 3	9-12	<ul style="list-style-type: none"> • Demonstrates a thorough analysis of the situation by comprehensively breaking down the different aspects into their component parts (AO3a) • Demonstrates comprehensive application of knowledge and understanding that is consistently relevant to the context of the question (AO2) • Demonstrates a thorough evaluation which comprehensively considers different factors/events and competing points, leading to a conclusion which is well supported (AO3b)

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