T-LEVELS | Institute for Apprenticeships & Technical Education

T Level Technical Qualification in Digital Production, Design and Development

Mark Scheme (Results)

Summer 2024

Paper 2: The Business Environment

Pearson

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)	**Award one mark for each correctly named method up to a maximum of two marks.** • Human generated • AI/Machine Learning/Machine generated • Sensors • IoT • Transactional data **Accept any other appropriate response.**	**(2)**

Question Number	Answer	Mark
1(b)	**Award one mark for each correctly named type up to a maximum of two marks.** • Virus • Ransomware • Worms • Trojans • Spyware/keylogger • Adware • Fileless Malware • Botnet **Accept any other appropriate response.**	**(2)**

Question Number	Answer	Mark
1(c)	**Award one mark for identification of a reason and one mark for an appropriate linked explanation, up to a maximum of two marks.** Location of system (1) which allows easy access to system (1) Circumstance of use/ End user skill level (1) could cause unforeseen security breach (1) System robustness /layout (1) could cause hardware failure (1) **Accept any other appropriate response.**	**(2)**

Question Number	Answer	Mark
2	**Award one mark for each identification and one mark for an appropriate linked explanation up to a maximum of four marks.** • Document sharing (1) to allow multiple users to work together in drafting (1) • Communication tools (1) to discuss business issues (1) • File storage (1) to allow centralised data storage (1) • Most up to date version is accessed (1) as documents are updated in real time (1) **Accept any other appropriate response.**	**(4)**

Question Number	Answer	Mark
3(a)	**Award one mark for identification of the reason one mark for an appropriate linked explanation of the process and one mark for a further expansion of the explanation, up to a maximum of three marks.** Allows for better cooling (than air cooled) (1) as powerful processors (1) would be needed to run required software (1) Keeps processors at a lower/within accepted temperature (1) as the load on the processor would be heavy (1) due to the processing required (by animation software) (1) Provides efficient heat dissipation (1) reducing the workload of processor fans (1) which makes the system quieter/reduces power usage (1) **Accept any other appropriate response.**	**(3)**

Question Number	Answer	Mark
3(b)	**Award one mark for each of the following linked points, up to a max of two marks.** Using virtualisation/ (1) to emulate the required environment (1) **Accept any other appropriate response.** **Additional guidance** Accept VM or Virtual machine as alternative to virtualisation	**(2)**

Question Number	Answer	Mark
4	**Award one mark for identification of a 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.** • To stop competitors from contacting company's clients (1) to tempt them with better offers (1) to avoid loss of business/profit (1) • Maintain trust of clients (1) to ensure company reputation is preserved (1) to help with customer retention (1) • To comply with legislation (1) avoiding legal consequences (1) which could result in fines (1) **Accept any other appropriate response.**	**(3)**

Question Number	Answer	Mark
5	**Award one mark for each of the following linked points, up to a max of three marks.** • Use a packet sniffer (1) • to intercept/eavesdrop/perform Man in the Middle attacks on (1) • data (packets) being sent to/from the Wi-Fi router (1) • Use a mobile hotspot (1) • to imitate/spoof an official Wi-Fi network (1) • to harvest data/poison data packets/spread malware (1) **Accept any other appropriate response.**	**(3)**

Question Number	Answer	Mark
6(a)	**Award one mark for identification of a reason and one mark for an appropriate linked explanation, up to a maximum of four marks.** • Use software to create adverts (1) that could be placed in cycling media (1) • Using social media (1) to target parents that are more likely to buy the bicycle (1) • Use online forms (1) to gather opinion (of new products) (1) • Analyse sales (1) to drive advertising focus (1) • Search engine optimisation (1) to draw attention to website (1) **Accept any other appropriate response.**	**(4)**

Question Number	Answer	Mark
6(b)	**Award one mark for identification of the drawback, one mark for an appropriate linked explanation of the drawback and one mark for a further expansion of the explanation, up to a maximum of three marks.** • Initial cost of machine (1) is likely to be high (1) therefore the payback period is likely to be long (1) • Staff might not be familiar with the new machine (1) and would need training (1) which takes them away from productive activities (1) • Maintenance costs (1) could be high (1) as expensive parts/external staff could be needed (1) • Less need for human labour (1) leading to redundancies (1) which could impact staff morale/impact local community (1) **Accept any other appropriate response.** **Additional guidance** Maintenance could refer to planned or unplanned events	**(3)**

Question Number	Answer	Mark
7	**Award one mark for identification of the consideration one mark for an appropriate linked explanation of the consideration and one mark for a further expansion of the explanation, up to a maximum of three marks.** • Some users could be not native speakers (1) and therefore might not understand primary UI language (1) so choice of language should be allowed (1) • Certain icons have an offensive connotation (1) in some cultures (1) so care should be taken when selecting icons (1) • Some cultures prefer clear and concise language (1) reflecting their direct style (1) so directness of language should be considered (1) **Accept any other appropriate response.**	**(3)**

Question Number	Indicative content:	Mark
8	**Learners might refer to some/all of the following in their responses, but learners should be rewarded for other pertinent contextualised answers:** The evaluation may include: <u>What is DaaS</u> • Cloud based service • Stores, Processes and Analyses data <u>Benefits of DaaS</u> • Cloud based environments are more resilient so less down time • Many ready-made analysis tools so lead time is reduced • As system is cloud based it is more scalable • Data is centralised so updates/additions/deletions are made on one central store • Users get an abstracted view of data, and do not need to worry about sources and structures <u>Drawbacks of DaaS</u> • May have limited tool sets, and customisation of tools might not be possible • Data is stored on cloud so security could be compromised • Can take time to transfer large datasets • Frequently changing datasets might not be reflected immediately due to technical limitations • <u>Possible conclusion</u> • DaaS allows users to interpret and use data, by breaking down technical barriers • DaaS is resilient and scalable • But security must be considered • Overall DaaS is an effective business tool	**(9)**

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-3	• 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	• 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	• 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
9(a)	**Award one mark for identification of a characteristic and one mark for an appropriate linked explanation, up to a maximum of four marks.** • Skills (1) as it is a public facing site (1) • Education level (1) to reduce barriers to becoming a customer (1) • Additional needs/disability (1) to improve accessibility (1) **Accept any other appropriate response.**	**(4)**

Question Number	Answer	Mark
9(b)	**Award one mark for identification of a reason and one mark for an appropriate linked explanation, up to a maximum of four marks.** • To prevent the introduction of malware (1) such as viruses (1) • To prevent the theft of code (1) that could be sold to competitors (1) • To prevent data being copied (1) so it can be stolen/leaked (1) **Accept any other appropriate response.**	**(4)**

Question Number	Indicative content:	Mark
9(c)	**Learners might refer to some/all of the following in their responses, but learners should be rewarded for other pertinent contextualised answers:** Discussion may include: <u>User Identity</u> A method of a user proving who they are. This can be done via usernames and passwords or biometric methods. <u>Data vulnerability</u> Once a user has proved they are who they claim they are, The system can then only grant access to data that they are authorised to view/edit. <u>Relationship</u> Only allowing authorised users to access data will reduce data vulnerability.	**(6)**

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-2	• 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	• 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	• 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
10(a)	**Award one mark for each of the following linked points, up to a max of three marks.** • CPU time is split (1) • into a number of time slices (1) • and each program is allocated time slices (1) • based on round robin/polling/priority allocation (1) **Accept any other appropriate response.**	**(3)**

Question Number	Answer	Mark
10(b)	**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.** • In case the update causes problems/unforeseen side effects (1) and to enable the system to be restored (1) to its pre-update/original state (1) **Accept any other appropriate response.**	**(3)**

Question Number	Answer	Mark
10(c)	**Award one mark for each identification of a factor, one mark for an appropriate linked explanation of the factor and one mark for a further expansion of the explanation, up to a maximum of four marks.** • Adding additional features (1) such as improved data aggregation features (1) • Diversification (1) such as selling pet insurance to existing clients. (1) • Scaling (1) due to a large increase in customers. (1) • Rebranding (1) caused by a new company image (1) • Adapting new technology (1) such as VR (1) • Increase security (1) In response to changes in legislation /to counter new threats (1) • Response to competition (1) to preserve market share (1) • Fixing a problem (1) such as system crashes (1) • Improving the system (1) by increasing responsiveness (1) **Accept any other appropriate response.** **Additional guidance** Accept any appropriate linked expansion	**(4)**

Question Number	Indicative content:	Mark
10(d)	**Learners might refer to some/all of the following in their responses, but learners should be rewarded for other pertinent contextualised answers:** **<u>Advantages of wearable devices</u>** • Activity levels can be continuously monitored • Prompts can be sent to the device with encouragement to be more/less active • Other health data such as heart rate/sleep can be monitored • *Iachus* can use this data to tailor products to clients based on risks **<u>Disadvantages of wearable devices</u>** • There is an initial cost in terms of buying the devices and developing software • Some clients may live in an area with poor connectivity and this would hinder data collection • There would be an ongoing cost in terms of server-side technology • Care must be taken to protect sensitive data • Some people might be worried that their data could be used for other purposes such as increasing insurance premiums, voiding policy payments <u>Possible evaluation</u> There are many advantages to Iachus, primarily in the ability to do real time monitoring. However there would be high initial and ongoing costs. On balance it would be beneficial as use of such devices can encourage people to be more active, which leads in general to less health problems.	**(9)**

Level	Mark	Descriptor
	0	No rewardable material
Level 1	1-3	• 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	• 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	• 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
11(a)	**Award one mark for each of the following linked points, up to a max of four marks.**	
	• **Draw charts/graphs (1) to show overall trends/summative data (1)** • **Create data table (1) to allow the user to see figures (1)** • **Prepare infographics (1) to simplify data presentation (1)** **Accept any other appropriate response.**	(4)

Question Number	Answer	Mark
11(b)	**Award one mark for each of the following linked points, up to a max of four marks.** • Data lakes (1) to store raw data (from a variety of sources) (1) • Data warehousing (1) to combine data (1) • Data mining (1) to extract information (1) **Accept any other appropriate response.**	(4)

Question Number	Answer	Mark
11(c)	**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.** • Using a one-way function (1) to convert plain text (1) to an encrypted format (1)	**(3)**

Question Number	Answer	Mark
11(d)	**Award one mark for each identification and one mark for an appropriate linked explanation up to a maximum of four marks.** • Personal information could be stolen (1) compromising privacy (1) • Company sensitive information could be compromised (1) and used by competitors (1) • Bogus data could be inserted into the system (1) to make information extracted meaningless/cause system downtime (1) • Loss of company reputation (1) causing customers to leave (1) • Financial cost (1) to fix system (1) • Legal action (1) leading to fines (1) **Accept any other appropriate response.**	**(4)**

Question Number	Indicative content:	Mark
11(e)	**Learners might refer to some/all of the following in their responses, but learners should be rewarded for other pertinent contextualised answers:** **Fixed Width** • All fields within the file would be of the same length as padding is used to fill out blanks. • This will may allow for faster reading of the file (as each block read into RAM will contain the same number of fields/records) • However a disadvantage of these file types is that truncation of data can occur, if the data item is longer than the length of the field. • Another disadvantage is that in some cases most of the file contains spaces as padding is used. • Typically fixed width files would be longer in terms of bytes than the equivalent CSV file. **CSV Files** • These as delimited files, which use a comma to separate fields. • This means that fields can grow or shrink to fit the exact number of characters needed. This means that no padding or truncation is needed. • A disadvantage of these type of file types is that each record is of a variable length, and so it is slower to read through this type of file. • Typically CSV files would be smaller than fixed width files in terms of bytes. *A conclusion can be supported within the body of the responses or as a separate identified conclusion.* **Possible conclusion** A CSV file should be used as the number of records used is relatively small. Also this data can be processed overnight and so speed of processing is not vital.	**(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	• 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	• 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	• 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)

‘T-LEVELS’ is a registered trade mark of the Department for Education.

‘T Level’ is a registered trade mark of the Institute for Apprenticeships and Technical Education.

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

‘Institute for Apprenticeships & Technical Education’ and logo are registered trade marks of the Institute for Apprenticeships and Technical Education.

Pearson Education Limited is authorised by the Institute for Apprenticeships and Technical Education to develop and deliver this Technical Qualification.

All the material in this publication is copyright © Pearson Education Limited 2024