

# T Level Technical Qualification in

# Digital: Digital Production, Design and Development

## Core Knowledge and Understanding

### Mark Scheme

### Topic test 7: Digital Environments

## **Digital: Digital Production, Design and Development**

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### **General Marking Guidance for all Topic Tests**

- 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 eg '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.



Question Number	Answer	Mark
1(a)	<p><b>Award one mark for each correctly identified component up to a maximum of two marks</b></p> <p>Component A <b>Network switch/Switch/Router/Hub</b></p> <p>Component B <b>Client</b></p>	(2)

Question Number	Answer	Mark
1(b)	<p><b>Award one mark for each identification of a benefit and one mark for each appropriate linked explanation, up to a maximum of four marks.</b></p> <ul style="list-style-type: none"> <li>• A Star network is robust (1) as the failure of a client does not cause whole network failure (1)</li> <li>• Collisions do not happen (1) thereby avoiding the need to retransmit packets (1)</li> <li>• Causes of network failure are easy to identify on a Star network (1) thereby reducing network downtime (1)</li> </ul> <p><b>Accept any other appropriate response.</b></p>	(4)



Question Number	Answer	Mark
1(c)	<p><b>Award one mark for each of the following linked points up to a maximum of three marks</b></p> <ul style="list-style-type: none"> <li>• The presentation layer formats data received from the email package into a suitable format (1).</li> <li>• It uses encryption techniques to improve message security (1)</li> <li>• Compresses data to allow for faster data transmission (1)</li> <li>• Passes data to the session layer (1)</li> </ul>	(3)

Question Number	Answer	Mark
2	<p>Award <b>one</b> mark for each of the following linked points up to a maximum of <b>three</b> marks.</p> <p>Stored data is rearranged (1) related data is placed together (1) in adjacent parts of the volume/drive (1)</p> <p><b>Accept any other appropriate response.</b></p>	(3)



Question Number	Answer	Mark
3	<p>Award <b>one</b> mark for each of the following linked points up to a maximum of <b>four</b> marks.</p> <ul style="list-style-type: none"> <li>• DNS server converts a URL into an IP address</li> <li>• It does this by maintaining a database of URLs and corresponding IP addresses</li> <li>• If a URL cannot be found then the DNS server will send a request to other linked DNS servers</li> <li>• Typically part of distributed database</li> </ul> <p><b>Accept any other appropriate response.</b></p>	(4)

Question Number	Answer	Mark
4(a)	<p><b>Award one mark for identification of a benefit, one mark for an appropriate linked explanation of the benefit and one mark for further expansion of the explanation, up to a maximum of three marks.</b></p> <ul style="list-style-type: none"> <li>• UDP can tolerate packet loss (1) which means that any missing packets are not re-requested (1) which could cause a delay in video playback (1)</li> </ul> <p><b>Accept any other appropriate response.</b></p>	(3)



Question Number	Answer	Mark
4(b)	<p><b>Award one mark for identification of a method and one mark for an appropriate linked explanation, up to a maximum of two marks.</b></p> <p>The program could be run inside a virtual environment (1) in order to restrict any malicious damage to that environment only (1)</p> <p>The program could be run in a sandbox (1) to prevent any changes to the machines hardware or software (1)</p> <p><b>Accept any other appropriate response.</b></p>	(2)



Question Number	Indicative content:	Mark
4(c)	<p><b>Students might refer to some or all of the following in their responses, but should be rewarded for other pertinent contextualised answers. The evaluation may include:</b></p> <p>Magnetic hard disks can be bulky and heavy however this is not an issue as the Video files would be stored on servers in a server farm and therefore portability is not an issue</p> <p>Magnetic hard disks have motors in them, these motors can break if dropped but again this is not an issue as the disks would be located in a server farm and would not be moved often.</p> <p>The motors in a magnetic hard disk have high power requirements but this is not a factor as they will be run off mains power not batteries.</p> <p>Magnetic hard disks can become fragmented and this slows down access time. However there will be relatively little change to the data stored on disks in the video library and fragmentation should not occur. Also the system can be designed to have enough capacity to minimize the chances of fragmentation taking place in the future.</p> <p>Magnetic hard disks have a high capacity which is needed to store large video files, which can run into Gigabytes of data.</p> <p>The cost per unit of storage is amongst the cheapest of all storage mediums/devices.</p> <p>Access time is relatively fast, and should not affect the users viewing experience.</p>	(9)



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