

T Level Technical Qualification in **Digital: Digital Production, Design and Development**

Core Knowledge and Understanding

Mark Scheme

Topic test 3: Emerging issues and impact of digital

Digital: Digital Production, Design and Development

General Marking Guidance for all Topic Tests

- All learners must receive the same treatment. Marker 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.
- You should mark according to the mark scheme not according to your 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. You should always award full marks if deserved. You 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.
- 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 a marker as to how each mark is awarded.

2) **Example Responses**

These demonstrate the type of acceptable responses that a learner might provide and where each mark is awarded.

3) **Additional marking Guidance**

This informs markers 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.



Question Number	Answer	Mark
1(a)	<p>One mark each for any two of the following points:</p> <ul style="list-style-type: none"> ● observing normal behavior (1) ● awareness of co-workers (1) ● recognising changing or abnormal behaviour. (1) <p>Accept any other appropriate response.</p>	(2)

Question Number	Answer	Mark
1(b)	<p>Award one mark for each source of guidance and one mark for an appropriate linked explanation, up to a maximum of four marks</p> <ul style="list-style-type: none"> ● guidelines from professional organisations (1) which would give industry standards to adhere to (1) ● strategic planning and decisions (1) so they can see how the decisions would impact on the overall direction of the company (1) ● the content of internal policy documents (1) which would govern how staff should behave (1) <p>Accept any other appropriate response.</p>	(4)



Question Number	Answer	Mark
2	<p>Award one mark for each of the following linked points up to a maximum of three marks.</p> <p>Near field technology chips can be placed in runners' clothing (1). These chips are read by scanners placed along the course (1) and results fed back to a central computer to update runners' progress (1)</p> <p>Fitness tracking devices can be worn (1) which would use GPS technology (1) to feed a runners' real time position back to a central computer (1).</p> <p>Accept any other appropriate response.</p>	(3)

Question Number	Answer	Mark
3	<p>Award one mark for each identification and one mark for an appropriate linked explanation, up to a maximum of four marks.</p> <p>May miss some information (1) as some families may not have a suitable phone (1)</p> <p>Financial impact (1) as families may have to buy a new phone (to access the app) (1)</p> <p>App may be slow to respond (1) as not all families are able to receive a high-speed internet connection (1)</p> <p>Using the app might eat into data allowances (1) as some families rely on a mobile data connection/may not have Wi-Fi connection (1)</p> <p>Children may have to stop playing in the league (1) as their parents cannot access the relevant information (1)</p> <p>Accept any other appropriate responses.</p>	(4)



Question Number	Answer	Mark
4	<p>Award one mark for identification of whistleblowing, one mark for an appropriate linked explanation of why whistleblowing would be used and one mark for a further expansion of the explanation, up to a maximum of three marks.</p> <ul style="list-style-type: none"> • To protect employees (1) from (fear of) reprisal (1) for reporting inappropriate/illegal behaviours (1) • Policy would clearly define process (1) for raising concerns (1) whilst protecting employment rights (1) <p>Accept any other appropriate responses.</p>	(3)

Question Number	Answer	Mark
5	<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>Interconnected world</p> <p>Many devices will talk to each other seamlessly. Devices will vary in size and complexity. Simple binary sensors, wearable technology, smartphones, computers, home and office equipment complex automated machines. The IoT will gather data from a vast range of sources, analyze and process this data and create actions based on this data.</p> <p>Convenience</p> <p>Many daily tasks are already aided by the IoT. For example a users commute time to work is automatically recalculated every day, using data collected from traffic sensors, police accident logs etc.</p> <p>This will increase with e.g. fridges adding items to shopping lists automatically, transport companies harvesting real time data from wearable devices to estimate the number of users in station concourses and feeding this data back to regular travelers warning them if needed to avoid stations.</p> <p>Small NFT sensors could be placed in all retail items, making barcodes obsolete and speeding up the checkout process in shops</p> <p>Protection of collected and processed data.</p> <p>Devices which store and process data on the IoT will have ethical as well as legal responsibility to customers to use and store data responsibly. It is possible to store the data legally whilst not using it ethically. This could include, analysis of customer purchases and profiling customers for age, social class, spending power, and habits.</p> <p>Employees could access the data for personal reasons and use customer profiles inappropriately.</p> <p>Privacy of the company customers</p> <p>Mobile Technology (wearables/smartphones/tablets/cars) constantly gather information and allow individuals to be pinpointed. This could be misused to locate users home addresses, places of work, children’s schools. Many people will be worried about this loss of privacy. Devices in the home that are connected to the IoT can be compromised and used to spy on people in their own home</p>	



	<p>Computer crime</p> <p>Devices which gather, store and process data on the IoT need to be protected. Much more data is/will be gathered, and this data must be protected from criminals. Effective steps (such as encryption of transmitted and stored data, firewalls etc) will need to be constantly evaluated and updated. If major data breaches occur in the future it is likely that the breadth and depth of data compromised will be much more than now, and this could result in major losses to individuals and to companies (in the form of fines/compensation). Companies must have contingency plans in place.</p> <p>Cyberterrorism</p> <p>Major integrated systems could be hacked, e.g. a water treatment plant could be hacked and lethal amounts of chlorins could be injected into drinking water. On a smaller scale vehicles connected to the IoT could be hijacked and used as weapons.</p> <p>Surveillance</p> <p>Many will be worried by the amount of data they ‘surrender’ to the IoT increases. This could be used by security forces to monitor the behavior of individuals. Many will see this as a concern whilst some will see this as a powerful tool in keeping society safe</p> <p>System failure</p> <p>System do sometimes fail, if a major system fails (e.g. air traffic control system) and no redundant system/alternative is available then catastrophic events can happen. On a smaller scale the failure of e.g. a sensor transmitting footfall into a supermarket could cause a minor problem.</p>	<p>(9)</p>
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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 (AO3) • Demonstrates basic application of knowledge and understanding that is partially relevant to the context of the question (AO2) • Demonstrates a basic assessment which partially considers different factors/events and their relative importance, leading to a conclusion which is superficial or unsupported (AO3)
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 (AO3) • Demonstrates good application of knowledge and understanding that is relevant to the context of the question (AO2) • Demonstrates a good assessment which considers different factors/events and their relative importance, leading to a conclusion which is partially supported (AO3)
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 (AO3) • Demonstrates comprehensive application of knowledge and understanding that is consistently relevant to the context of the question (AO2). • Demonstrates a thorough assessment which comprehensively considers different factors/events and their relative importance, leading to a conclusion which is well supported (AO3)