

A-LEVEL

**Information and
Communication Technology**

Unit 3 The Use of ICT in the Digital World
Mark scheme

2520
June 2016

Version: 1.0 Final

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from aqa.org.uk

Level of response marking instructions

Level of response mark schemes are broken down into levels, each of which has a descriptor. The descriptor for the level shows the average performance for the level. There are marks in each level.

Before you apply the mark scheme to a student's answer read through the answer and annotate it (as instructed) to show the qualities that are being looked for. You can then apply the mark scheme.

Step 1 Determine a level

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptor for that level. The descriptor for the level indicates the different qualities that might be seen in the student's answer for that level. If it meets the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptor and the answer. With practice and familiarity you will find that for better answers you will be able to quickly skip through the lower levels of the mark scheme.

When assigning a level you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level and then use the variability of the response to help decide the mark within the level, ie if the response is predominantly level 3 with a small amount of level 4 material it would be placed in level 3 but be awarded a mark near the top of the level because of the level 4 content.

Step 2 Determine a mark

Once you have assigned a level you need to decide on the mark. The descriptors on how to allocate marks can help with this. The exemplar materials used during standardisation will help. There will be an answer in the standardising materials which will correspond with each level of the mark scheme. This answer will have been awarded a mark by the Lead Examiner. You can compare the student's answer with the example to determine if it is the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the Lead Examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

Indicative content in the mark scheme is provided as a guide for examiners. It is not intended to be exhaustive and you must credit other valid points. Students do not have to cover all of the points mentioned in the Indicative content to reach the highest level of the mark scheme.

An answer which contains nothing of relevance to the question must be awarded no marks.

GENERAL GUIDANCE NOTES FOR EXAMINERS

Overall guidelines

1. All examples accepted should be clearly related to the subject area and should not be “generalised” examples.
2. Attention should be paid to ensure that marks are not awarded for simple restating of the question or the stem, often involving the exact same terms.
3. It should be remembered that scripts could be seen after they are marked and so consistency of approach and correct mechanics of marking are essential.
4. Rules on positioning of ticks and marks are to aid in checking and remarking of scripts.
5. Do not expect the candidate to use the exact wording given in the mark scheme. If you are in doubt as to the correctness of an answer given by the candidate, consult your Team Leader.
6. The answers given in the mark scheme are exemplars. Credit must be given for other correct answers not given in the mark scheme. Please refer to Team Leaders where there is any doubt.
7. One-word answers, where acceptable, will be indicated on the question paper.
8. The meaning of ICT-specific words and phrases are generally as defined by BCS Glossary of Computing and ICT (current edition).

Specific marking guidelines

9. The basic rule is one mark one tick. The tick to be positioned at the point where the mark is gained in the answer and definitely not in the margin.
10. The use of the following symbols/marks is acceptable:
 - a. BOD – where the benefit of the doubt is given for the point the candidate is making. This is generally where poor writing or English is an issue. Its widespread use should be avoided.
 - b. An omission sign ^ should be used where the candidate has given insufficient information to gain a mark. This is particularly useful when a teacher or student looks at scripts against a mark scheme.
 - c. In conjunction with the use of BOD and omission signs, and to aid understanding, examiners may also wish to underline parts of an answer.
11. Markers are responsible for checking:
 - a. That all work has been marked on each script.

1	<p>The Beautiful Bedrooms Partnership (BBP) has back office systems which are costly to maintain.</p> <p>Using an example, define the term ‘back office systems’.</p>	3 marks
	<p>Purpose of the question: An easy starter question that provides some differentiation. It was suggested at the planning meeting that a question be set on back office systems.</p>	
	<p>Guidance for examiners: Up to two marks for a definition that demonstrates an understanding of internal, or non-customer facing, operation. One mark for a valid example of back office systems.</p>	
	<p>Example answer: Back office systems run the internal operations (1) of an organisation and are not accessible or visible to the general public. (1)</p> <p>An example of a back office system is Accounts. (1)</p>	
	<p>Specification reference: 3.3.2.8 AO 1.5</p>	

2 (a)	<p>Using examples, describe the SaaS and PaaS cloud computing options suggested by the consultants.</p> <p>Purpose of the question: To assess knowledge of emerging technologies.</p> <p>Guidance for examiners: Eight marks for description points/examples.</p> <p>There must be at least two examples for maximum marks. There must also be at least one example of both types of options for maximum marks. Note: Any described use of the platforms counts as an example. Note: Only one mark for privacy issues.</p> <p>Example answer: For SaaS (Software as a Service) (1), software is supplied by the cloud provider (1), an example being payroll. (1)</p> <p>For PaaS (Platform as a Service) (1), the cloud provider supplies a platform to run software provided by BBP (1) and a fixed charge is made. (1) For example, if BBP purchased package Accounting software, this could be installed on the cloud platform (1) and BPP would not have to provide hardware. (1)</p> <p>Specification reference: 3.3.1.1 AO 1.7</p>	8 marks
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2 (b)	Explain why the consultants suggested the SaaS platform should be used initially.	7 marks
Purpose of the question: To assess knowledge of emerging technologies.		
Guidance for examiners: One mark for each valid reason/extension point.		
Example answer: Initially, use of the cloud platform would be low. (1) This is because BBP would be unable to transfer all its systems at once (1), as users would need to be trained (1) and data transferred to the new system. (1) Because use of a SaaS platform is charged on a transaction basis (1), rather than the PaaS platform which is charged on a fixed basis (1), charges are likely to be lower than the PaaS fixed costs in the first year or so. (1)		
Specification reference: 3.3.1.1 AO 1.7		

3	Discuss the advantages and disadvantages of BBP implementing a BYOD policy.	15 marks
Purpose of the question: To assess knowledge and understanding of current ICT resource management issues.		
Guidance for examiners: Banded mark scheme. See bands below and exemplar answer.		
Example answer: Zero mark The candidate has written nothing worthy of credit. <p style="text-align: right;">0 marks</p> Low mark range Candidate has stated one advantage and/or one disadvantage. Description and discussion is limited or non-existent and the language used demonstrates a lack of understanding. <p style="text-align: right;">1 – 5 marks</p> Medium mark range Candidate described at least three advantages/disadvantages (i.e. two advantages + one disadvantage or one advantage + two disadvantages) but the descriptions are limited and confined to either the organisation or the employee. <p style="text-align: right;">6 – 10 marks</p> High mark range Candidate discussed advantages and disadvantages from the organisation and/or employee perspectives. <p style="text-align: right;">11 – 15 marks</p> Exemplar answer. It could be argued that the advantages of a BYOD policy for BBP are cost savings, increased flexibility and simplified disaster recovery. For example, there would be a reduced need for BBP to purchase and maintain devices, as these would be provided by employees. Because the device is owned by the employee, there would be fewer thefts, as employees would take better care of devices they own. It would also enable employees to work remotely and, because they are likely to have the device with them they would be able to continue to work at any location. A BYOD policy for BBP would also simplify disaster recovery, as there would be no need for PCs to be provided at any DR centre.		

	<p>Possible disadvantages are that BBP would need to ensure that Company security is not compromised. Employees may have also have concerns about their security/privacy, as the device they use for work would be the same device used to log on to Facebook or Twitter. Therefore, employees may be wary about their employers being able spy on them, possibly gaining access to their personal passwords or being able to see private computer usage.</p>	
	<p>Specification reference: 3.3.12.2 AO 1.5</p>	

4	Explain how ICT systems could be used to implement a 'just in time' operation for BBP.	12 marks
	<p>Purpose of the question: Assesses knowledge and understanding of supply chain and data transfer between organisations.</p>	
	<p>Guidance for examiners: One mark per valid point. One mark per extension.</p>	
	<p>Example answer: A 'just in time' operation uses ICT systems to ensure BBP's stock levels are kept to a workable minimum. (1) A production control system (1) could calculate how much stock is required (1) and would check current unallocated stock levels using a stock control system. (1). If there is insufficient stock (1), an automatic order is placed with the supplier (1) using an automated system, such as Electronic Data Interchange; (1) this uses agreed formats (1), eliminating the need for data entry (1) and reducing errors. (1) Once authorised (1) by BBP, payment is transferred to the supplier's account using BACS (1) – itself being an example of EDI.</p>	
	<p>Specification reference: 3.3.2.7 AO1.2 and AO1.5 6:6 split</p>	

<p>5a</p>	<p>For each of the three situations described in Table 1, identify the applicable legislation and insert the appropriate letter (A, B, C, or D) in the box.</p> <p>A - Consumer Contract Regulations 2013 B - Computer Misuse Act 1990 C - Equality Act 2010 D - The Telecommunications (Lawful Business Practice) (Interception of Communications) Regulations 2000</p> <p style="text-align: center;">Table 1</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Situation</th> <th style="text-align: center;">Applicable legislation</th> </tr> </thead> <tbody> <tr> <td>Providing the disabled with accessibility to websites</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Providing seller information on e-commerce websites.</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Employer accessing employee's emails</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table>	Situation	Applicable legislation	Providing the disabled with accessibility to websites	<input type="checkbox"/>	Providing seller information on e-commerce websites.	<input type="checkbox"/>	Employer accessing employee's emails	<input type="checkbox"/>	<p>3 marks</p>
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Providing seller information on e-commerce websites.	<input type="checkbox"/>									
Employer accessing employee's emails	<input type="checkbox"/>									
<p>Purpose of the question:</p> <p>Tests knowledge and understanding of legislation.</p>										
<p>Guidance for examiners:</p> <p>Marked automatically.</p>										
<p>Example answer:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Situation</th> <th style="text-align: center;">Applicable legislation</th> </tr> </thead> <tbody> <tr> <td>Providing the disabled with accessibility to websites</td> <td style="text-align: center;"><input type="checkbox" value="C"/></td> </tr> <tr> <td>Providing seller information on e-commerce websites.</td> <td style="text-align: center;"><input type="checkbox" value="A"/></td> </tr> <tr> <td>Employer accessing employee's emails</td> <td style="text-align: center;"><input type="checkbox" value="D"/></td> </tr> </tbody> </table>		Situation	Applicable legislation	Providing the disabled with accessibility to websites	<input type="checkbox" value="C"/>	Providing seller information on e-commerce websites.	<input type="checkbox" value="A"/>	Employer accessing employee's emails	<input type="checkbox" value="D"/>	
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<p>Specification reference: 3.3.6.1</p>										

5b	With reference to the principles of the Data Protection Act 1998, explain the procedures that could be used to ensure compliance with this Act.	10 marks
	<p>Purpose of the question:</p> <p>Applies knowledge of legislation to the understanding of procedures</p>	
	<p>Guidance for examiners:</p> <p>One mark each for identifying DPA principles, maximum four principles, but a maximum of two marks for listing principles.</p> <p>One mark each for any explanatory points or examples.</p> <p>At least two procedures need to be explained for maximum marks. The same procedure cannot be used twice.</p>	
	<p>Example answer:</p> <p>An access control procedure is needed (1) to as one of the DPA principles is that personal data must be held securely. For example, an organisation will need to limit system access by use of an access control procedure (1) where users will need a username and password to gain access. (1)</p> <p>It will also require backup and recovery procedures (1), including those for disaster recovery. (1)</p> <p>Data redundancy procedures (1) will be required as another principle is that personal data should be accurate (1) Cross-checking will be needed if there is data duplication across multiple systems. (1)</p> <p>Data purging procedures will be needed (1) as another principle is that information should not be kept longer than is necessary. (1)</p>	
	<p>Specification reference:</p> <p>3.3.6.1 AO 1.3</p>	

6	<p>Describe, using examples, the following types of system:</p> <ul style="list-style-type: none"> • Transaction Processing Systems • Management Information Systems • Decision Support Systems 	10 marks
	<p>Purpose of the question:</p> <p>To test knowledge and understanding of types of ICT systems and their uses.</p>	
	<p>Guidance for examiners:</p> <p>One mark for each point, example or extension.</p> <p>There must be at least one example of each system type for maximum marks.</p> <p>Max 7 if only 2 types of system are described. Max 5 if only 1 type of system is described.</p>	
	<p>Example answer:</p> <p>A transaction processing system is an information system that assists staff at the operational level to conduct event-driven daily business transactions (1). An analysis of an organisation's business would identify all business functions and each of these would break down into one or more transactions (1). For example, processing an order would break down into several transactions (1) such as receiving payment. (1)</p> <p>A management information system converts data into information (1). It is then communicated in an appropriate form (1) for managers to make decisions (1). For example, the bakery manager in a supermarket chain may require details of past seasonal sales details in order to determine order levels. (1)</p> <p>Decision support systems are high level management information systems used by senior managers. (1) For example, the Board of a supermarket would require information about competitor activity and likely potential customers before opening a branch in a new area. (1)</p>	
	<p>Specification reference: 3.3.2.8 AO 1.2 and AO 1.5, split 5/5</p>	

7	Explain the issues involved in testing large ICT systems.	12 marks
	<p>Purpose of the question: To assess knowledge and understanding of ICT system reliability issues in a real life situation.</p>	
	<p>Guidance for examiners:</p> <p>Banded marking. See bands below.</p>	
	<p>Example answer:</p> <p>Zero mark The candidate has written worthy of credit. 0 marks</p> <p>Low mark range Candidate identified issues involved in testing large ICT systems, but these issues were either irrelevant to large ICT systems or were not described adequately, or the words/context used by the candidate demonstrated a general lack of understanding. 1 – 4 marks</p> <p>Medium mark range Candidate described issues involved in testing large ICT systems but did not go beyond the descriptions, or failed to explain the purpose of performing certain types of testing, or did not provide any examples to aid the descriptions given. 5 – 8 marks</p> <p>High mark range Candidate explained issues involved in testing large ICT systems, justifying and giving reasons for the need for certain types of testing, possibly including relevant examples to emphasise points. 9 – 12 marks</p>	
	<p>Specification reference: 3.3.10.2 AO 2.4</p>	

8	<p>An organisation is about to develop a corporate system using a linear development method.</p> <p>Discuss the likely client and user involvement at each stage of the development process.</p>	20 marks
<p>Purpose of the question: To assess knowledge and understanding of client and user involvement at each stage of the development process.</p>		
<p>Guidance for examiners: Banded marking.</p> <p>Note: Names used for the different stages may differ, depending upon the textbook used.</p> <p>See bands below.</p>		
<p>Example answer:</p> <p>Zero marks The candidate has written nothing worthy of credit. 0 marks</p> <p>Low mark range The candidate included at least one stage, but the writing demonstrated a general lack of knowledge or understanding of the development process. There were some errors in spelling, punctuation and grammar and these affected understanding and suggested weaknesses. Often the text was barely legible. 1 – 5 marks</p> <p>Medium mark range The candidate included at least two stages of the development process and described client and user involvement, without any meaningful discussion. The form and style of writing was generally appropriate but with some deficiencies. The candidate expressed straightforward ideas clearly, if not always fluently. Sentences and paragraphs were not well-connected. Information or arguments sometimes strayed from the point or were weakly presented. There were some errors in spelling, punctuation and grammar but these did not cause misunderstanding. The text was legible. 6 – 10 marks</p> <p>Good mark range</p>		

<p>The candidate explained at least four stages of the development process, including client and user involvement, but fell short of discussing the reasons why such involvement was necessary.</p> <p>The candidate expressed moderately complex ideas clearly and reasonably fluently, using well-linked sentences and paragraphs. Information or arguments were generally relevant and well structured, with occasional spelling and punctuation and grammar errors. Text was legible.</p> <p style="text-align: right;">11 – 15 marks</p> <p>High mark range</p> <p>The candidate included at least five stages of the development process and discussed both client and user involvement, including the reasons why such involvement was necessary.</p> <p>The candidate used a form and style of writing appropriate to purpose, expressing complex ideas clearly and fluently. Sentences and paragraphs followed on from one another clearly and coherently, and specialist vocabulary was used appropriately. There were few, if any, errors of spelling, punctuation and grammar. Text was legible.</p> <p style="text-align: right;">16 – 20 marks</p>	
<p>Specification reference: 3.3.8.1 AO 1.6, AO 2.1 Split 8/12</p>	