AQA

AS

Information and Communication Technology

Unit 2 Living in the Digital World

Mark scheme

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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 only figures in the margin should be sub-totals for parts of questions and a final total for the whole question in the box provided.
11. All writing must be marked as read, either by the presence of ticks or by striking through the script with a vertical line.
12. Where candidates have added extra to their answers on additional pages, the total mark should be indicated as 'including x marks from supplementary page y'. The total mark should be written in the appropriate printed box on the question paper.
13. 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. It may be appropriate to indicate where the same point has been covered more than once by an arrow or *where a point has been covered in several lines of prose by the use of brackets.*

d. For questions where candidates' answers are assessed for QWC, no individual ticks should be written on the script as it should be marked holistically.

14. Markers are responsible for checking:
    a. The transposition of marks to the front cover
    b. That all work has been marked on each script
    c. That all marks for individual questions are totalled correctly
    d. That the script total is transferred to the box at the top right of the script.
    e. That they **clearly** initial the script, under the total at the top right, so it is possible for the Principal Examiner to identify each markers work.

1	Below is a list of current legislation and regulations which relate to the use of ICT. **A** Data Protection Act **B** Copyright Designs and Patents Act **C** Computer Misuse Act **D** Waste Electrical and Electronic Equipment WEEE Directive **E** Freedom of Information Act **F** Regulation of Investigatory Powers Act For each part of the question, write the letter of the legislation that best matches the definition in the box given. Choose your answer from the list above.	4 marks
	Purpose of the Question	
	Guidance for examiners on how to mark this question	
	Example answer 1 (a) Makes unauthorised access to computer material illegal. Answer C 1 (b) Governs the protection of personal data. Answer A 1 (c) Allows certain public organisations to monitor people's Internet activities. Answer F 1 (d) Makes it illegal to use pirated software. Answer B	
	Area of the Specification and AOs this question covers 3.2.5 Safety and security of ICT systems. AO 1.3	

2	What is ICT?	4 marks
	Purpose of the Question Knowledge of the meaning of ICT.	
	Guidance for examiners on how to mark this question Max **4** from any below. Reject input, output on their own. The use of technology for data input data storage/retrieval data processing data transfer information output	
	Example answer ICT is the <u>use</u> of technology (1) for the input (1), storage (1) of data and the output of information. (1)	
	Area of the Specification and AOs this question covers 3.2.1 An ICT System and its components. AO 1.5	

3a	Using an example, define the term data.	2 marks
	Purpose of the Question Knowledge of the meaning of the term data	
	Guidance for examiners on how to mark this question 1 mark for the definition and 1 mark for the example (must be plural)	
	Example answer Data is just raw facts or figures. (1) An example would be 12, 45, 78, 3. (1)	
	Area of the Specification and AOs this question covers 3.2.2 Data and Information AO 1.1	

3b	Explain, using examples, how data can arise.	6 marks
	Purpose of the Question Knowledge and understanding of how data can arise	
	Guidance for examiners on how to mark this question Max 4 marks if no expansions or no examples No credit for forms of data Answers implying the source of data are creditworthy	
	Example answer Data can arise from a transaction (1) when you withdraw money from a bank account (1) or book a seat on a plane. (1) Data can arise from a questionnaire (1) such as a shopping survey. (1) Data can arise from phishing. (1) **OR** Data can be from a direct source (1) where the data is used for the purpose for which it is collected (1) or indirect source (1) where data is collected for one purpose and used for another. (1) An example of direct data is counting cars as they enter a car park. (1) An example of indirect data is using sales data from a credit card for promotional marketing. (1)	
	Area of the Specification and AOs this question covers 3.2.2 Data and Information AO 1.1	

4	Discuss the ways that help and support are provided for users of ICT systems.	12 marks
	Purpose of the Question Knowledge and understanding of the provision of help for ICT systems	
	Guidance for examiners on how to mark this question 1 mark for each way/method 1 for each relevant expansion. **Up to 8 marks for ways/methods** **Up to 8 marks for expansions** **Example Answer** There are on-line forums (1) where users can ask questions of other users running the the same software (1). These may also contain FAQs (1). User manuals provided with the software (1) can act as a reference on how to get started with the software (1). Partially sighted users (1) could gain support by enlarging the screen font (1). Help desks(1) where you can call an expert on the software (1). They could provide support via remote access (1). Context sensitive help (1) is available in many software packages by hovering your mouse over an icon (1) Possible ways of providing help or support could be, but are in no way limited to, User Manuals Context sensitive help Tooltips Wizards Help desks User forums Remote access Books and magazines.	
	Area of the Specification and AOs this question covers 3.2.3 People and ICT systems AO 1.1, 1.5	

5	A modern trend is to design ICT systems that can be worn, for example watches, glasses or items of clothing. Read the article below. ***Smartwatches*** *Smartwatches will be in on the health and fitness tracking game in 2015. Most Google smartwatches have heart rate monitors and the Apple Watch will have one too.* *Collecting all that data is useless if users can't do anything with it, though. Google, Microsoft and Apple announced free health-tracking services this year, each aiming to help users understand their health data.* ***Smartclothing*** *Clothing brands such as Adidas, Under Armour and Ralph Lauren, which showed off its new smartshirt at the US Open tennis tournament, are starting to make sports tops with built-in heart-rate and respiration monitoring.* *Smartshirts can measure things like heart rate and respiration much more accurately and without having to wear another device, because they can embed more sensors across a larger area.* *Smartsocks, motion tracking underwear and light reactive jackets that glow the harder you train are in the pipeline.* *Fitness is just one area being explored by smartclothing, with manufacturers envisaging GPS shoes, colour changing ties and smartphone charging jackets.* *Even beachwear could go smart with bracelets that track your desired tan level and swimwear that changes colour when you have had enough sun.* All ICT systems require an interface to allow humans to interact with them. The article above refers to some wearable ICT systems. Describe the characteristics and requirements of users that need to be considered when designing the interaction between users and these wearable ICT systems.	10 marks
	Purpose of the Question Knowledge and understanding of the characteristics and requirements of users	
	Guidance for examiners on how to mark this question 1 mark for each characteristic/requirement and 1 mark for each expansion.	

	Example answer Environment of use (1) needs to be considered. For example: - data from a smartwatch needs to be accessible both during the day and at night (1) or underwater. (1) The physical characteristics of the user also need to be considered. (1) A user may be colour blind (1) and therefore the colour changes of garments may have to be carefully chosen to enable the user to distinguish between them. (1) The task to be undertaken needs to be considered. (1) Smartphone charging jackets would need to have suitable safety systems built into them (1) to protect the user from electrocution. (1) The experience of the user is important. (1)	
	Area of the Specification and AOs this question covers 3.2.3 People and ICT systems AO 1.2, 1.4	

6a	Explain, with reasons, what other elements would be needed to achieve this access.	8 marks
	Purpose of the Question Knowledge and understanding of the elements of computer networks	
	Guidance for examiners on how to mark this question 1 mark for each element 1 for each expansion **Max 4 elements** NB This is an example answer. Other scenarios mentioning wireless connections are perfectly acceptable	
	Example answer A network interface card (NIC) (1) would be needed for each computer in order to allow data to be sent to and from the computer to the network (1). A cable (1) would be connected to each NIC to allow the physical transfer of data between the computers (1). Each of the three computer cables would be connected to a router (1) which together with suitable network software (1) would allow data to be transferred between the computers. (1) A suitable communications link such as a telephone line is needed. (1)	
	Area of the Specification and AOs this question covers AO 1.5 3.2.4 Transfer of data in ICT systems	

6b	Apart from access to the Internet and World Wide Web, describe further benefits that the family could gain by connecting the stand-alone computers together?	6 marks
	Purpose of the Question Knowledge and understanding of the characteristics of networks	
	Guidance for examiners on how to mark this question 1 mark for each benefit 1 for each expansion Max 4 marks for a list.	
	Example answer The family would be able to share files (1) between the three machines. Only one printer would be needed (1) as resources can be shared (1). The family can communicate via Email. (1) The data on the three machines can be backed up centrally (1). Site software licences are likely to be cheaper than buying several standalone licences.(1)	
	Area of the Specification and AOs this question covers AO 1.5 3.2.4 Transfer of data in ICT systems	

6c	Explain the need for standards when transferring data across ICT networks.	4 marks
	Purpose of the Question Knowledge and understanding of why standards are needed when transferring data	
	Guidance for examiners on how to mark this question Identification of a need/needs Good explanation of a need Max 2 if no explanations Credit relevant examples.	
	Example answer Standards are needed because files can be in different formats (1) for example document files (1) or sound files. (1) Both the sending and receiving devices need to recognise the same format. (1)	
	Area of the Specification and AOs this question covers AO 1.5 3.2.4 Transfer of data in ICT systems	

6d	Explain the differences between the World Wide Web and the Internet.	4 marks
	Purpose of the Question Knowledge of the characteristics of networks	
	Guidance for examiners on how to mark this question 1 mark for each valid point.	
	Example answer The Internet is a global collection of interlinked networks (1). The World Wide Web is hosted by the Internet (1) and is a collection of multimedia resources (1) accessed by a web browser (1).	
	Area of the Specification and AOs this question covers AO 1.5 3.2.4 Transfer of data in ICT systems	

7	Social Networking sites are widely used by people of all ages for a diverse range of reasons but typically to communicate with each other. Discuss the consequences, both for individuals and society that have resulted from the use of social networking sites to enable people to communicate with each other.	20 marks
	Purpose of the Question Knowledge and understanding of the consequences of the use of ICT	
	Guidance for examiners on how to mark this question **0 marks** Candidate has written nothing that is worthy of credit. **Low mark range [1 – 5 marks]** Student **identifies** consequences that have resulted from the use of social networking sites to allow people to communicate. The consequences may be few and limited in scope. The student has used a form and style of writing which is barely appropriate for its purpose. The student has expressed simple ideas clearly, but may be imprecise and awkward in dealing with complex or subtle concepts. Information or arguments may be of doubtful relevance or be obscurely presented. Errors in spelling, punctuation and grammar may be noticeable and intrusive to understanding, suggesting weaknesses in these areas. Text is barely legible. **Medium mark range [6 – 10 marks]** Student **outlines** a range of consequences that have resulted from the use of social networking sites to allow people to communicate. Individuals/society may be mentioned. Some understanding of them is demonstrated. The student has used a form and style of writing which is sometimes appropriate for its purpose but with many deficiencies. The student has expressed straightforward ideas clearly, if not always fluently. Sentences and paragraphs may not always be well-connected. Information or arguments may sometimes stray from the point of information or may be weakly presented. There may be some errors of spelling, punctuation and grammar, but not such as to cause problems in the reader's understanding and not such as to suggest a weakness in these areas. Text is legible. **Good mark range [11 – 15 marks]** Student **describes** a good range consequences that have resulted from the use of social networking sites to allow people to communicate, relating them to both individuals and society, demonstrating a good understanding of these consequences. Meaning is clear. The student has in the main used a form and style of writing appropriate for its purpose, with only occasional lapses. The student has expressed moderately complex ideas clearly and reasonably fluently. Student has used well-linked sentences and paragraphs. Information or arguments are generally relevant and well structured. There may be occasional errors of spelling, punctuation and grammar. Text is legible.	

	High mark range [16 – 20 marks] Student **discusses** a good range of consequences, both positive and negative, that have resulted from the use of social networking sites to allow people to communicate, relating them to both individuals and society, demonstrating an excellent understanding of these consequences. Meaning is clear. The student has selected and used a form and style of writing appropriate to purpose and has expressed complex ideas clearly and fluently. Sentences and paragraphs follow on from one another clearly and coherently. Specialist vocabulary has been used appropriately. There are few if any errors of spelling, punctuation and grammar. Text is legible. These consequences (in no particular order) could be, but are no means limited to: Cyber bullying Stalking Grooming Identity theft Theft Terrorism Employee vetting Updating status Sharing pictures Sharing feelings/expressing yourself Keeping in touch with family/friends. Making new friends Building relationships	
	Area of the Specification and AOs this question covers 3.2.9 Consequences of the use of ICT AO 1.4, 2.1	