

Oxford Revise | OCR Computer Science | Answers

Chapter 12 Online security

Question	Answer	Extra information	Marks	AO / Specification reference
1	Plain text is converted to cypher text before it is transmitted using an encryption key. This means that if data is intercepted during transmission, it cannot be understood, therefore keeping the content secure. A decryption key is needed to unscramble the message.	<p>1 mark for each correct statement about how encryption keeps transmitted data secure, up to a maximum of 3.</p> <p>It is important to remember that encrypted messages can still be seen or deleted, but they can't be understood due to the scrambling of the data.</p>	1 1 1	AO1/AO2 1.3.2
2	A DOS attack works by sending a very large number of messages or requests to a web server at the same time. The web server is overwhelmed and can't respond to everything. This will trigger a crash, making the web server inaccessible to genuine users.	1 mark for each correct statement explaining a DOS attack on a web server.	1 1 1	AO2 1.4.1

<p>3</p>	<p>Encryption is a useful method of protection because it means that any data that is intercepted can't be understood or used by the person who intercepts it. This is because the data has been scrambled so it is now meaningless. However, it can still be opened and the data altered or deleted, so if it then carries on to its destination, the intended recipient may not be able to use it, or it may not get to the destination at all. Also, if the interceptor gains access to the decryption key, they will also be able to decode the data.</p> <p>Firewalls filter the traffic coming into or leaving a network. A black list can be set up to check for certain types of data or data from certain IP addresses. If these are identified they can be blocked and the user notified. Firewalls are less effective at preventing malware from entering systems, or data that is heavily embedded.</p> <p>Passwords, especially if they are related to usernames, or levels of access can be very effective in maintaining security. They only allow access to authorised users, and can be used to only allow users access to areas they are supposed to access. Passwords can also be vulnerable to some forms of attack, especially if users don't use strong passwords that are not easy to guess, or if they share their passwords with friends, or use the same password for multiple logins.</p>	<p>Essay questions are marked based on the quality of the answer using levels, not on how many specific points have been made. It is important that answers are given using continuous prose with good English.</p> <p>The question usually either gives a scenario or lists a number of points that need to be explained, discussed or evaluated. It is important to answer the question in the style relevant to the command word, and include everything stated in the question. If a scenario is given, then the answer should be written in that context.</p> <p>Marks are awarded in one of three bands, if the response is credit worthy:</p> <p>Mark Band 3 – High Level (6-8 marks)</p> <p>Candidates will have given an answer that includes everything required in</p>	<p>4</p> <p>4</p>	<p>AO1</p> <p>AO2</p> <p>1.4.2</p>
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		<p>the question. In this case, both positive and negative points for Encryption, Firewalls and Passwords will have been discussed with clarity and using appropriate technical language.</p> <p>Mark Band 2 – Mid Level (3-5 marks)</p> <p>Candidates will have given a reasonable answer that includes a significant amount of the items required in the question. In this case, it could be that only positive or negative points have been discussed about Encryption, Firewalls and Passwords, or that both negative and positive points have been discussed, but of only one or two of the protection methods.</p> <p>Mark Band 1 – Low Level (1-2 marks)</p> <p>Candidates will have demonstrated a basic knowledge of the protection</p>		
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		<p>methods identified in the question, identifying positive or negative points, but there may also be some inaccuracies.</p> <p>0 marks</p> <p>No attempt has been made to answer the question, or the answer given does not match the requirements of the question.</p>		