1. Julian buys a new laptop with a system information utility and a diagnosis utility.

Describe, using examples, the purpose of the system information and diagnosis utilities.

System information utility

Example

Diagnosis utility

Example

[4]

2(a). Security on a computer can be provided directly by the operating system or by using utility programs.

Utility programs include antivirus, file transfer, firewall and system cleanup.

State which **two** of these utilities can be used for security.

1

2

[2]

(b). Identify and describe **two** methods by which the operating system can provide additional security directly.

1

2

[4]

3. i. William can choose between a full or incremental backup.

Identify the backup method William should use to backup the computer, justifying your choice.

Method
:

Justification
:

iii. Give **one** additional utility program William could make use of and describe how he would use it.

Utility program:

Description of use:

4(a). A restaurant has a computer-based ordering system which is running slowly. A technician has said that the hard disc drive is fragmented. The technician has suggested using utility software to defragment the drive.

Explain how the restaurant's hard disc could have become fragmented.

[4]

(b). Explain how defragmentation software could overcome the issue of the slow computer system.

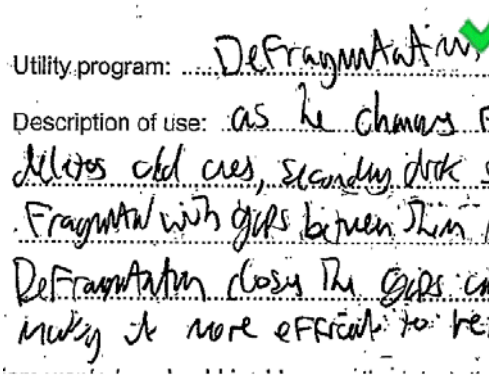
[3]

END OF QUESTION paper

Mark scheme

Question			Answer/Indicative content	Marks	Guidance
1			System information: ● displays important data about the current state of the computer ● e.g. temperature, free memory, network speed, % processor used Diagnosis: ● attempts to detect / resolve items that are not working correctly ● e.g. missing drivers, network connection	4	1 mark each for explaining "system information" and "diagnosis" + 1 mark for each example – accept relevan examples, but not examples related to virus / malware f diagnosis. Examples should be specific examples of the use of the utilities rather than general descriptions. **Examiner's Comments** In this part, many candidates appeared not to have a cl understanding of system information and diagnostic utilities which were featuring here for the first time, whereas they have previously performed well on questions about other system utilities in the specificatio Centres may need to reconsider how they address this topic to broaden candidates' understanding. Candidate should also ensure that they demonstrate their understanding in their answers. Responses such as "a system information utility provides information about th system" do not enable the examiner to assess what the candidate understands and were not awarded marks. Candidates, on the whole fared better on describing the purpose of diagnostic utilities, although in the example examiners expected the diagnosis of system faults rath than the presence of malware. Some candidates misunderstood the requirement to provide an example - they gave an example of brand names of utilities, rather than an example of the use of the utility. Candidates should be aware that brand names will never be require as answers to examination questions. Answers that wer expected were of the form "System information utilities display the current state of the computer" with as a possible example "the amount of RAM available".
			Total	**4**	
2	a		● antivirus ● firewall	2	
	b		e.g. ● (User name and) password ● Only allows you to use the system if you are authorised ● Encryption ● Prevents hackers from understanding any data if accessed (e.g. passwords) ● Access rights ● To prevent files from being modified / deleted ● User access control ● Prevents users from making changes to the system Marks in pairs	4	*Accept any security measure that is provided by the operating system itself but not by standard utility progra (even if the utility program is normally bundled with operating systems).* *The first bullet is for identifying or a brief description of measure.* *The second bullet is for a further more detailed descript or a description of how the measure ensures security.* Any reasonable biometrics is acceptable.
			Total	**6**	
3		i	1 mark per bullet to max 3 e.g. Incremental:	3 AO2 1a (1) AO2 1b (2)	Discussion must match the backup given. Either method is acceptable, marks are awarded for the justification.

			• Only the changes need to be backed up • The software/OS/settings are unlikely to have changed between backups • Small number of files likely to be used/edited between backups • Take less time to backup • Each backup will take less memory space to store Full: • Backup all the data/files and software • It might not take a significant time to back up entire system • He might only have a small number of files to be backed up each time • Safer as have more past versions to revert to • User may have changed settings on computer • Faster to restore the backup • Needs to do a full before he can do an incremental		Allow marks for why the other is not appropriate. If there is no method given, or both, then read the answ and mark their justifications. It must be clearly given wh method each point refers to. **Examiner's Comments** Candidates could choose either method for this questio the important element was their justification. Neither method was identified as being better than the other, b candidates needed to consider the scenario and apply their knowledge to it. Most candidates gained marks fo describing what their chosen method of backup involve More able candidates were able to apply the amount of data; timescales etc. to their chosen methodology, and justify their decision. Weaker candidates attempted to describe backup and the generic benefits of backing up data, as opposed to justifying the method they had chosen. Some candidates successfully identified that b would be appropriate, and gave a reasoned justification that incorporated the use of both. For example using a backup initially and then incremental for the successive backups.
		ii	1 mark for naming program, 2 for description of use e.g. • Encryption software • Scramble/encode/mix up data • …so it cannot be read/understood if intercepted/stolen • Defragmentation • Move free space together • Move files together • E.g. Faster access to files • (Data) compression • Reduce the file size of files / makes files smaller • To use less storage space • Faster transmission • To store more files • Anti-virus / anti-malware • To help protect computer/data against viruses/malware	3 AO1 1a (1) AO1 1b (1) AO2 1b (1)	Must be appropriate to scenario. For encryption, no mark for 'it encrypts data' Do not award: any form of backup or device driver. Do not award: encryption stops data being stolen. Do not award: brand names. But read description. Mark program first. If incorrect 0 marks. If wording is no clear, or terminology not exact but it can be understood marks can be awarded for description of use. Defragmentation – do not award marks for describing a fragmented disk this is a NAQ

			• To scan the computer to look for/quarantine/remove viruses/malware • Disk analysis and repair • Scan disk and look for faults • Prevent loss of data due to faulty disk • Auto-update • Checks Internet for new versions of software/OS • Downloads and installs without user interaction • Firewall • Examine ingoing and outgoing traffic • To help restrict/prevent unauthorised access • …over a network/external source		**Examiner's Comments** This was an open question that required candidates to consider utility programs they have learnt about and choose one that would be appropriate for an individual user. The most common answer was defragmentation. Candidates were then required to describe its use. Man candidates described a fragmented disc and the proble associated with it – which does not answer the questio Some candidates then described the use of a defragmenter to speed up access to files. A common misunderstanding here was that a defragmenter increas the speed of a computer. Speed requires quantification an answer, because it does not make a computer work faster, or process data faster, it allows faster access to stored data. Other common answers included disc clean-up and anti-virus. Exemplar 3  This candidate has given defragmentation. They have t explained how a disc becomes fragmented, which does not gain marks because it is not answering the questio At the end of their answer, they explain how defragmentation is used to group files together, and making the retrieval of the files more efficient.
			Total	**6**	
4	a		• Orders have been saved onto the system as they order food and then deleted once processed (1) • Once other orders have been made, new files are created (1) which may be bigger than the spaces left by the deleted files (1) • The order files are split up (1)	4	Up to a maximum of 4 marks. A maximum of three marks if there is no contextualisati Allow a mark if candidate's state that fragmentation increases access time (1)
	b		• Files on the hard disc drive are moved (1) • Empty spaces collected together (1) • Files are moved to be stored together (1) • Fewer disc accesses are needed (1)	3	Up to a maximum of 3 marks.
			Total	**7**	