

Question	Answer	Marks														
2(a)	<p>1 mark for each correct line</p> <table><thead><tr><th>Utility software</th><th>Description</th></tr></thead><tbody><tr><td>Disk formatter</td><td>Scans software for errors and repairs the problems</td></tr><tr><td>Defragmentation</td><td>Moves parts of files so that each file is contiguous in memory</td></tr><tr><td>Back-up</td><td>Creates a copy of data that is no longer required</td></tr><tr><td>Disk repair</td><td>Sets up a disk so it is ready to store files</td></tr><tr><td></td><td>Scans for errors in a disk and corrects them</td></tr><tr><td></td><td>Creates a copy of data in case the original is lost</td></tr></tbody></table>	Utility software	Description	Disk formatter	Scans software for errors and repairs the problems	Defragmentation	Moves parts of files so that each file is contiguous in memory	Back-up	Creates a copy of data that is no longer required	Disk repair	Sets up a disk so it is ready to store files		Scans for errors in a disk and corrects them		Creates a copy of data in case the original is lost	4
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2(b)	<p>1 mark per bullet point to max 4</p> <ul style="list-style-type: none">• memory management• file management• security management• hardware / device / peripheral / resources management• input/output management• process management• error checking and recovery• provision of a platform for software• provision of a user interface	4														

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4(d)	<p>1 mark for each correctly completed term</p> <p>Compilers are usually used when a high-level language program is complete. They translate all the code at the same time and then run the program. They produce executable/.exe/object code files that can be run without the source code.</p> <p>Interpreters translate one line of a high-level language program at a time, and then run that line of code. They are most useful while developing the programs because errors can be corrected and then the program continues from that line.</p> <p>Assemblers are used to translate assembly code into binary/machine code.</p>	4

5(c)	<p>1 mark per bullet point to max 3</p> <ul style="list-style-type: none"> • Saves (programming/testing) time as code does not have to be written/re-written from scratch // code does not have to be tested • Code is already tested so it is more robust/likely to work • If there is an improvement in the library routine the program updates automatically • can perform complex calculations that the programmer may be unable to do 	3
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8(a)(i)	<p>1 mark per correct row</p> <table><tr><th>Statement</th><th>Assembler</th><th>Interpreter</th><th>Compiler</th></tr><tr><td>Translates and executes each line of source code one line at a time</td><td></td><td>✓</td><td></td></tr><tr><td>Translates low-level source code into machine code</td><td>✓</td><td></td><td></td></tr><tr><td>Must be present in memory to execute the code</td><td></td><td>✓</td><td></td></tr><tr><td>Translates high-level source code into low-level code</td><td></td><td>✓</td><td>✓</td></tr></table>	Statement	Assembler	Interpreter	Compiler	Translates and executes each line of source code one line at a time		✓		Translates low-level source code into machine code	✓			Must be present in memory to execute the code		✓		Translates high-level source code into low-level code		✓	✓	4
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8(a)(ii)	<p>1 Mark per bullet point to max 2</p> <ul style="list-style-type: none">• The compiler is not required to run the program• The program can be distributed without the source code• A compiler produces code that executes faster than the equivalent for an interpreter	2																				
8(b)(i)	<p>1 mark per bullet point to max 2</p> <ul style="list-style-type: none">• To reduce the storage space required to store the file• To reduce the time it would take to transmit the file• Because they have to email it and have limited file sizes for sending/receiving	2																				
8(b)(ii)	<p>1 mark per bullet point</p> <ul style="list-style-type: none">• All of the original data needs to be retained/recoverable• ... because otherwise the file contents would not make sense	2																				

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5	<p>One mark per pair of rows (shaded and unshaded)</p> <table><tr><th>A</th><th>B</th><th>C</th><th>Working space</th><th>X</th></tr><tr><td>0</td><td>0</td><td>0</td><td></td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td><td></td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td><td></td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td><td></td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td><td></td><td>0</td></tr><tr><td>1</td><td>0</td><td>1</td><td></td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td><td></td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td><td></td><td>0</td></tr></table>	A	B	C	Working space	X	0	0	0		0	0	0	1		1	0	1	0		0	0	1	1		0	1	0	0		0	1	0	1		0	1	1	0		0	1	1	1		0	4
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7(a)(i)	<p>One mark per bullet point to max 3</p> <ul style="list-style-type: none"> • Prevents two processes occupying the same memory space • Organises memory e.g. paging/segmentation • Makes uses of virtual memory • Keeps track of allocated and free memory locations • Allocates memory to processes • Ensures fair use of memory • Releases memory when a process stops 	3
7(a)(ii)	<p>One mark per bullet point to max 2</p> <ul style="list-style-type: none"> • Installs drivers • Sends/receives data from a buffer // buffer management // • Sends commands to the device • Receives/handles messages/signals/interrupts from the device • Control of hardware usage by processes • Device detection • Power management • Keep track of device status (free or busy) 	2
7(b)	<p>One mark for name and one for description × 2, max 4 The description must match the name</p> <ul style="list-style-type: none"> • Virus/Malware checker • ...scans disk for viruses and reports, quarantines or deletes them • File compression • ...reduces the size of a file • Back up • ...creates a copy of data in case of loss, so that the images can be restored • Defragmenter • ...finds files that are not stored in contiguous blocks and moves them together • Disk formatter • ...creates a logical drive on a hard drive // reformats a previously used hard drive // creates logical partitions // prepares a disk for first use • Disk repair/Disk contents analysis • ...attempts to recover damaged files // checks disk for space and usage // to identify/mark the errors / bad sectors 	4

Question	Answer	Marks
7(c)	<p>One mark per bullet point to max 3</p> <ul style="list-style-type: none"> • Already tested • Should be relatively free from errors // more robust • Used by many others • Make use of another programmer's knowledge • Precompiled • Saves (programming/testing) time 	3

Question	Answer	Marks
10(a)	<p>One mark per bullet point to max 3</p> <ul style="list-style-type: none"> • Easier de-bugging • Errors can be corrected in real time • Errors are reported as the interpreter finds them. • An error can be corrected and translation continued from where it stopped • The effect of any change made to the code can be seen immediately • Parts of the program can be tested, without all the program code being available. 	3
10(b)	<p>One mark for a correct answer</p> <p>Source code is needed at run time // No executable file produced, (so source code can be edited) // Translation software needed every time the program is run // execution time increased</p>	1

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9(a)	1 mark for each correctly identified utility program	3								
	<table><tr><th>Description</th><th>Utility program</th></tr><tr><td>Reorganises files on a disk to improve efficiency</td><td>Defragmentation software</td></tr><tr><td>Scans a hard disk to identify bad sectors</td><td>Disk contents analysis / repair software</td></tr><tr><td>Prepares a hard disk for first use</td><td>Disk formatter</td></tr></table>		Description	Utility program	Reorganises files on a disk to improve efficiency	Defragmentation software	Scans a hard disk to identify bad sectors	Disk contents analysis / repair software	Prepares a hard disk for first use	Disk formatter
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Question	Answer	Marks
1	<p> 1 mark for both compiler and interpreter linking to the sixth box (<i>Converts a high-level language program into a different form</i>) 1 mark for the compiler having the other two correct links 1 mark for the interpreter having the other two correct links </p> <div data-bbox="331 792 1283 1688"> <div> <p>Language translator</p> <div> <div>Compiler</div> <div>Interpreter</div> </div> </div> <div> <p>Statements</p> <div> <div>Converts a low-level language instruction into binary</div> <div>Stops as soon as it finds a syntax error</div> <div>Needs the source code to be present when the user's program is run</div> <div>Reports all errors found at the end of the process</div> <div>Corrects syntax errors as they are detected</div> <div>Converts a high-level language into a different form</div> <div>Creates an executable file</div> </div> </div> </div>	3