GradeMax

Pearson

Mark Scheme (Results)

Summer 2026

Pearson Edexcel International GCSE
In Computer Science (4CP0/01)
Paper 01: Principles of Computer Science

GradeMax

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2026
Question Paper Log Number P79637RA
Publication Code 4CP0_01_2606_MS
All the material in this publication is copyright
© Pearson

General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question	Answer	Additional Guidance	Mark
1(a)	Award **one** mark for each correct cell: 	Do not accept input devices	2
1(b)	**The only correct answer is C** *A is not correct because cloud storage reads data from remote servers* *B is not correct because magnetic storage uses a read/write arm/head* *D is not correct because solid state storage reads electrical charges*	The correct answer is Optical storage	1
1(c)	Award **one** mark for: • More cores (1) / less cores (1) Award **one** mark for any correct link for more / less cores: • Faster performance (1) / slower performance (1) • Run more programs/tasks at a time / multitask (1) / fewer programs/tasks at a time (1) • Can process more instructions in a given time period (1) /fewer instructions in a given time period (1)	Must be awarded first mark to obtain second mark	2

<table>
<tr><th>Question</th><th>Answer</th><th>Additional Guidance</th><th></th></tr>
<tr><td>1(d)</td><td>Award one mark for each correct letter:
<table><tr><th>Component</th><th>Letter</th></tr><tr><td>Address bus</td><td>D</td></tr><tr><td>Arithmetic logic unit</td><td>C</td></tr><tr><td>Clock</td><td>A</td></tr><tr><td>Control bus</td><td>E</td></tr><tr><td>Control unit</td><td>B</td></tr><tr><td>Main memory</td><td>F</td></tr></table></td><td>Do not award a mark for any cell containing more than one letter.</td><td>6</td></tr>
<tr><td colspan="3">Total for question 1</td><td>11</td></tr>
</table>

<table>
<tr><th>Question</th><th>Answer</th><th>Additional Guidance</th><th>Mark</th></tr>
<tr><td>2(a)</td><td>The only correct answer is B

A is not correct because file management uses hierarchical directories
C is not correct because security management uses access right tables
D is not correct because user management uses IDs and passwords</td><td>The correct answer is
Process management</td><td>1</td></tr>
<tr><td>2(b)</td><td>Award one mark for each correct translator:

<table><tr><th>Program</th><th>Translator</th></tr><tr><td>A printer driver is written in a low-level language.
The driver controls the printer’s hardware.</td><td>Assembler</td></tr><tr><td>A data analysis program is written in a high-level language.
The program must run on different computer platforms.</td><td>Interpreter</td></tr><tr><td>A computer game is written in a high-level language.
The program runs on one type of games console.</td><td>Compiler</td></tr></table></td><td>Accept minor spelling differences e.g. assembling, assembly</td><td>3</td></tr>
<tr><td>2(c)</td><td>Award one mark for any of the following up to a maximum of two marks:

• What event/action/change took place (1)
• Which resources/systems were used (1)
• When/date/time the event/action/change took place (1)
• Who/which account performed the event/action/change (1)</td><td>Accept examples e.g. “file was deleted” for MP1</td><td>2</td></tr>
</table>

<table>
<tr><th>Question</th><th>Answer</th><th>Additional Guidance</th><th>Mark</th></tr>
<tr><td>2(d)</td><td>Award one mark for each correct column:

<table><tr><th>A</th><th>B</th><th>A OR B</th><th>NOT (A OR B)</th></tr><tr><td>0</td><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td><td>0</td></tr></table></td><td>Accept T for 1
and F for 0</td><td>2</td></tr>
<tr><td>2(e)</td><td>Award one mark for any of the following up to a maximum of three marks:

• Each (plain text) letter/symbol is substituted/swapped/shifted (to produce an encrypted text letter) (1)
• A key/value/shift/offset is used to determine the shift/offset (applied to every letter) (1)
• If the key is a positive number the characters are shifted right / If the key is negative the characters are shifted left (1)
• If the end of the alphabet is reached you cycle back to the start / spaces/punctuation are usually not encrypted (1)</td><td>Marks can be awarded from suitable examples.</td><td>3</td></tr>
<tr><td colspan="3">Total for question 2</td><td>11</td></tr>
</table>

Question	Answer	Additional Guidance	Mark
3(a)(i)	Award **one** mark for: • Bus (1)		1
3(a)(ii)	Award **one** mark for: • The way/how computers/nodes/devices/components are connected/arranged (physically or logically) (1)		1
3(a)(iii)	Award **one** mark for any of the following up to a maximum of **three** marks: • Whole network will fail if (main) cable (backbone) is damaged / single point of failure (1) • Data collisions can occur / can cause bottlenecks (1) • Additional nodes will degrade performance / make network slower / higher latency (1) • Greater security risk when using a shared line / all devices receive data packets (1) • The network stops working if the terminators are damaged (1) • Only one device can transmit at a time (1) • More difficulty in troubleshooting / finding faults (1)		3
3(b)	**The only correct answer is A** *B is not correct because HTTP is a protocol used to transfer data* *C is not correct because a URL is a path to a resource on the internet* *D is not correct because the WWW is a collection of webpages*	The correct answer is DNS	1
3(c)	**The only correct answer is C** *A is not correct because 5G does not use Bluetooth* *B is not correct because a LAN connects many devices on one site*	The correct answer is PAN	1

Question	Answer	Additional Guidance	Mark
	D is not correct because a WAN can cover large geographical distances		
3(d)	Award **one** mark for each of: – (1) 78 (1)	The correct answer is –78	2
3(e)(i)	Award **one** mark for any of the following up to a maximum of **two** marks: • Higher bandwidth / transmission speed (1) • More secure / less chance of eavesdropping (1) • Lower latency (1) • Less subject to signal interference (1) • Can span longer distances / not needing to be as close to router (1) • More stable / reliable (1)	Do not allow obstructions Do not accept faster without expansion	2

Question	Answer	Additional Guidance	Mark
3(e)(ii)	Award **one** mark for each of: Method 1 • (A AND NOT B) / (NOT B AND A) (1) • (B AND NOT A)/ (NOT A AND B) (1) • <expr1> OR <expr2> (1) Example statement: (A AND NOT B) OR (B AND NOT A) Method 2 • (A OR B) / (B OR A) (1) • NOT (A AND B) / NOT(B AND A) (1) • <expr1> AND <expr2> (1) Example statement: (A OR B) AND NOT (A AND B)	Order of precedence is NOT, AND, OR Must use either method 1 or method to assign marks Do not credit circuit diagrams/truth tables	3
		Total for question 3	**14**

Question	Answer	Additional Guidance	Mark
4(a)(i)	Award up to **two** marks for a linked description such as: • Relies on a third-party to provide the service (1) and they could go out of business / that may not have secure systems (1) • Data has to be transmitted/sent (to a remote server) (1) so it is susceptible to interception/eavesdropping (1)	Do not accept hacking as an equivalent to not having secure systems	2
4(a)(ii)	Award up to **two** marks for a linked explanation such as: • The amount of storage available can easily/quickly be increased (1) because the provider will have this capacity available immediately / just need to pay more / no need to increase hardware storage (1) • Data is protected from loss e.g through natural disaster/theft/corrupted files (1) because data is automatically backed up at a remote location (1) • No need to plan for future storage/hardware needs (1) because storage capacity can be scaled up and down as required (1) • Files can be uploaded/downloaded/accessed anytime from anywhere/from home/any devices (1) because cloud storage is accessed via the internet (1) • No need to employ as many support staff (1) as this is provided by 3rd party • Multiple employees can work together (1) because they can share/work on the same document at the same time (1)	Do not accept cheaper without expansion Responses can be credited across marking points. but marks must be awarded from **linked explanation**	2

Question	Answer	Additional Guidance	Mark
4(b)(i)	Award up to **two** marks for a linked description such as: • replicating human intelligence/brain / working without human guidance (1) • by deciding on its response based on what it learns / uses pattern recognition / machine learning / create new answers from previous data / perform complex tasks (1)	Allow 'intelligent beings' for human	2

Question	Answer	Additional Guidance	Mark
4(b)(ii)	Indicative content Student use • Summarising key documents / texts • Checking/grading answers and getting immediate answers • Checking grammar/writing style • Generate content • Helping with study skills / scheduling revision • Use of virtual tutors Teacher/school use • Marking assignments • Setting / generating questions • Analysing patterns in marks and student data to identify trends • Drafting curriculum / lesson plans Ethics • Privacy issues when submitting work or personal data to systems that data mine • Plagiarism is a risk and can be difficult to detect • Equality of access to systems with potential cost barriers • Potential bias depending upon training data • Accuracy of outcomes / results is not certain • Reliance on technology instead of critical thinking Recommendation • Students will need to be taught responsible use of AI to prevent plagiarism and over-reliance on technology • Teachers should be encouraged to let AI perform routine tasks so that they can give more individual time to students and planning		6
		Total for question 4	**12**

Level	Mark	Descriptor
	0	No rewardable content.
Level 1	1–2	Basic, independent points are made showing elements of knowledge and understanding of key concepts/principles of computer science. The evaluation will contain basic information with little linkage between points made.
Level 2	3-4	Demonstrates adequate knowledge and understanding of key concepts/principles of computer science. The evaluation shows some linkages and lines of reasoning with some structure and a recommendation.
Level 3	5-6	Demonstrates comprehensive knowledge and understanding by selecting relevant knowledge and understanding of key concepts/principles of computer science to support the evaluation being presented. The evaluation shows a well-developed, sustained line of reasoning which is clear, coherent, logically structured, and has an appropriate recommendation.

<table>
<tr><th>Question</th><th>Answer</th><th>Additional Guidance</th><th>Mark</th></tr>
<tr><td>5(a)</td><td>The only correct answer is A

B is not correct because 10 MB is 10,000,000 bytes
C is not correct because 1,250 KB is 1,250,000 bytes
D is not correct because 1,000,000 bytes is less than 0.1 GiB</td><td>The correct answer is 0.1 GiB

GiB is 107,374,182 bytes</td><td>1</td></tr>
<tr><td>5(b)(i)</td><td>Award one mark for each of the following up to a maximum of two marks:

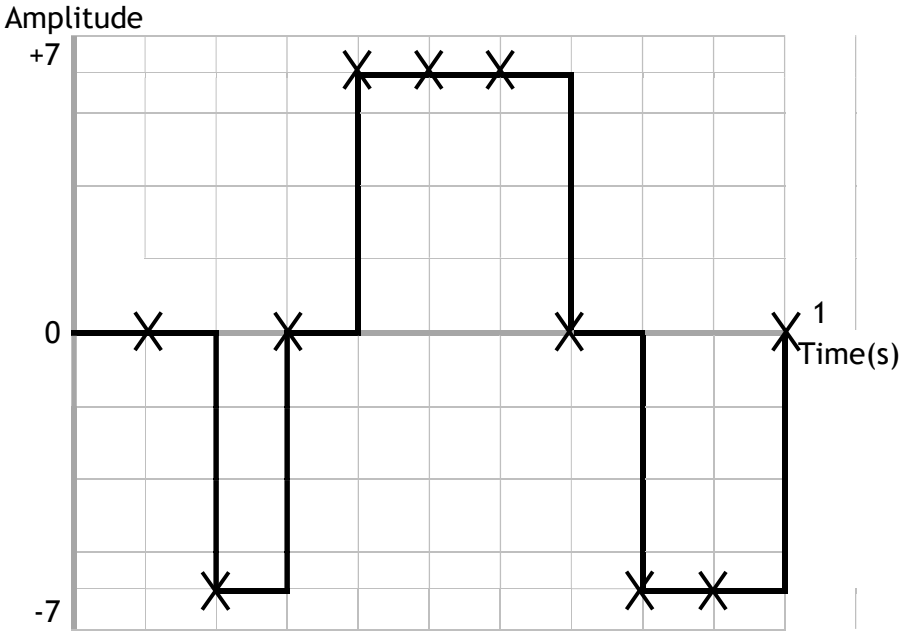
• colour coding given in the correct order (1)
• two correct run lengths given as 4-bit binary numbers (1)

Award one mark for:
• fully correct encoding (1)

Example:

<table><tr><td>00</td><td>0101</td><td>01</td><td>0010</td><td>10</td><td>1001</td></tr></table>
<table><tr><td>0101</td><td>00</td><td>0010</td><td>01</td><td>1001</td><td>10</td></tr></table></td><td>Allow either ordering of the colour code and run length pair as long as they are consistent for the three runs.
Encoding doesn’t have to use the six cells</td><td>3</td></tr>
</table>

Question	Answer	Additional Guidance	Mark
5(b)(ii)	Award **one** mark for each of the following up to a maximum of **two** marks: • 16 x 51 (pixels) (1) • Multiplying by 2 bits per pixel in the numerator for colour depth (1) • Dividing by 8 in the denominator to convert to bytes (1) Award **one** mark for: • fully correct expression (1) Example: $\frac{16 * 51 * 2}{8}$ bytes	**Award** marks for generic expression. E.g. (Height x width x colour depth) / (bits per byte) **Accept** for 3 marks: 2 x 2 x 51 4 x 51 **Award** 1 mark For correct calculated answer of 204 if no other marks awarded	3
5(b)(iii)	Award **one** mark for: • The amount of storage space will stay the same (1) Award **one** mark for a linked explanation such as: • because four colours can be represented with a colour depth of two bits (1) • because a fourth colour can be represented using 11 (1) • colour depth (bits) doesn't change (1)	Must gain first mark for award of second mark for correct expansion	2

Question	Answer	Additional Guidance	Mark
5(c)	Award **one** mark for any of the following up to a maximum of **six** marks: • x-axis labelled correctly as time/seconds (1) • y-axis labelled correctly as amplitude/sample/value (1) • x-axis values labelled from 0 to 1 (1) • y -axis values labelled from -7 to +7 or binary equivalents (1111 to 0111) (1) • remaining 9 values plotted to correct points for axis values (1) • points joined to form a correct square wave (1)  	Allow follow through for MP5 if y axis is labelled as 0, 7, 15 (or binary equivalents) for unsigned integers. Allow follow through for MP5 if y axis is labelled as -1, 0 and 7 (or binary equivalents) for two's complement.	6
		Total for question 5	**15**

Question	Answer	Additional Guidance	Mark
6(a)(i)	Award **one** mark for each of the following up to a maximum of **two** marks: • It can be readily translated directly into program code (1) • There is no specific syntax to learn (1) • It is easy to understand (1) • Help to plan code before writing code (1)	Don't accept to find errors – done by trace tables Accept 'interpreted' for 'translated'	2
6(a)(ii)	Award up to **two** marks for a linked explanation such as: • To typecast/convert the input from a string to an integer (1) because otherwise an (type mismatch) error would occur in the condition on line 05 (1) • To ensure that the input is an integer (1) because an (data type) error occurs when comparing with counter on line 5 / because the same data type is required to make a comparison (1)	Number is not enough for 'integer'	2
6(a)(iii)	Award **one** mark for: • (line) `05` (1) Award **one** mark for any of the following: • `WHILE counter <= number DO` (1) • `WHILE NOT (counter > number) DO` (1) • `WHILE number >= counter DO` (1) • `WHILE NOT (number < counter) DO` (1)	Accept `WHILE counter < (number + 1) DO`	2

Question	Answer	Additional Guidance	Mark
6(b)	Award up to **two** marks for a linked description such as: • The expected output of an algorithm can be checked (1) by recording the changes of variable state that take place (1) • Manually checking how an algorithm works (1) by tracking the changes in variable values (1) • Errors can be detected in algorithms (1) by checking that the expected output is produced / code is working as intended (1)		2

Question	Answer	Added Guidance	Mark
6(c)(i)	Award **one** mark for each of the following up to a maximum of **six** marks: • Animal array values initialised (1) • Flag initialised to True then set to False and index initialised to 0 (1) • First swap in pass one of Dog and Cat identified and flag set to True (1) • Second swap in pass one of Dog and Bee completed (1) • Pass two completed with Cat and Bee swapped (1) • Final pass with no swaps completed (1)	Accept 'True' in flag column and zeroes in index and temp in row 1 for MP1 Allow correct values in blank cells in mark scheme	6

			Animal array			
flag	**index**	**temp**	[0]	[1]	[2]	[3]
			Dog	Cat	Bee	Emu
True						
False	0	Dog	Cat	Dog		
True	1	Dog		Bee	Dog	
True	2					
	3					
False	0	Cat	Bee	Cat		
True	1					
	2					
	3					
False	0					
	1					
	2					
	3					

Question	Answer	Additional Guidance	Mark
6(c)(ii)	Award **one** mark for any of the following: • To sort the items alphabetical/ascending order (1) • To perform a bubble sort (1)	Do not accept reference to size of animal	1
6(c)(iii)	Award up to **two** marks for a linked explanation such as: • You need to swap the contents of array values (1) because without this one of the values would be lost (1) • One of the values would overwrite the other (1) because a variable cannot hold two different values at the same time (1)		2
		Total for question 6	**17**