Cambridge Assessment International Education

Cambridge IGCSE™

COMPUTER SCIENCE **0478/12**

Paper 1 **May/June 2020**

MARK SCHEME

Maximum Mark: 75

Published

Students did not sit exam papers in the June 2020 series due to the Covid-19 global pandemic.

This mark scheme is published to support teachers and students and should be read together with the question paper. It shows the requirements of the exam. The answer column of the mark scheme shows the proposed basis on which Examiners would award marks for this exam. Where appropriate, this column also provides the most likely acceptable alternative responses expected from students. Examiners usually review the mark scheme after they have seen student responses and update the mark scheme if appropriate. In the June series, Examiners were unable to consider the acceptability of alternative responses, as there were no student responses to consider.

Mark schemes should usually be read together with the Principal Examiner Report for Teachers. However, because students did not sit exam papers, there is no Principal Examiner Report for Teachers for the June 2020 series.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the June 2020 series for most Cambridge IGCSE™ and Cambridge International A & AS Level components, and some Cambridge O Level components.

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Question	Answer	Marks
1(a)	Any **three** from: – MAR – MDR // MBR – PC // IAR // NIR // SCR – ACC – CIR // IR – IAS	**3**
1(b)(i)	– Fetch – Execute	**2**
1(b)(ii)	– Control unit	**1**

Question	Answer	Marks
2(a)	Any **four** from: – To translate the high-level language into low-level language – Interpreter used whilst writing the program – Interpreter used to debug code line by line – Compiler used when program completed – Compiler used to create separate executable file (so compiler no longer needed) – If it runs first time in a compiler there are no syntax errors	**4**
2(b)	Any **three** from: – Easier to understand // Don't know assembly code – Easier to debug – Easier to maintain – Portable – Knowledge of manipulating memory locations/registers not required – Can use an IDE – Greater range of languages	**3**

Question	Answer	Marks
3(a)	Any **four** from: – Encryption key is used – Encryption algorithm is used – Encryption key / algorithm is applied to plain text – … to convert it into cypher text – Same key is used to encrypt and decrypt the text	**4**
3(b)	Any **three** from: – Firewall – Password – Proxy server – Physical methods (by example e.g. CCTV, Locks) – Access rights – Asymmetric encryption – Disconnect from network	**3**

Question	Answer	Marks
4(a)(i)	– NAND 	**2**
4(a)(ii)	– NOR 	**2**

Question	Answer	Marks
4(b)		4

A	B	C	Working space	X
0	0	0		**0**
0	0	1		**0**
0	1	0		**1**
0	1	1		**1**
1	0	0		**0**
1	0	1		**0**
1	1	0		**1**
1	1	1		**1**

4 marks for 8 correct outputs
3 marks for 6 or 7 correct outputs
2 marks for 4 or 5 correct outputs
1 mark for 2 or 3 correct outputs

Question	Answer	Marks
5(a)	Any **three** from: – Convert HTML code – Display web pages – Check if a website is secure – Request web pages from a web server – Send URL/domain name – Runs active script – Store history/favourites/bookmarks – Create tabs	3

Question	Answer	Marks
5(b)(i)	– Carries out authentication of server and client – Handles encryption algorithms / keys	**2**
5(b)(ii)	– Record layer	**1**
5(b)(iii)	Any **one** from: – SSL – HTTPS	**1**
5(c)	– Cookies	**1**

Question	Answer	Marks
6		**6**

Statement	**Capacitive (✓)**	**Resistive (✓)**
Needs pressure to be applied to create a circuit		✓
May not register a touch if the user is wearing gloves	✓	
More commonly used in smartphones	✓	
More responsive to a touch	✓	
Needs an electrical field to be changed to register a touch	✓	
Cheaper to manufacture		✓

One mark per correct tick

Question	Answer	Marks
7(a)(i)	– 12 (ignore leading zeros)	1
7(a)(ii)	– 198 (ignore leading zeros)	1
7(a)(iii)	– 1217	1
7(b)	**One** mark per each correct hex value in correct order – 0E9	3

Question	Answer	Marks
8(a)	Any **three** from: – It is a universal standard – It can't be inserted the wrong way around – Supports different transmission speeds – Automatically detects if correct driver installed	3
8(b)	**Two** marks for benefits, **one** mark for drawback Benefits: – Faster speed of printing – Can print duplex / on both sides – Many letters can be printed from one toner cartridge – Can print in high volumes Drawback – Toner cartridge more expensive to buy – More time to warm-up – Larger footprint	3

Question	Answer	Marks
8(c)(i)	Any **two** from: – Paper jam – Out of paper – Out of toner/ink – Buffer full – Awaiting input – Print complete – Printer ready Award any other valid example	**2**
8(c)(ii)	Any **one** from: – Operating system – Interrupt handler – Interrupt service routine	**1**

Question	Answer	Marks
9(a)		**6**

Statement	**HDD (✓)**	**SSD (✓)**
It has a limited number of read/write cycles		✓
It uses magnetic properties to store data	✓	
It has moving parts	✓	
It is non-volatile storage	✓	✓
It can be used as an external storage device to back-up data	✓	✓
It uses flash memory to store data		✓

Question	Answer	Marks
9(b)	Any **two** from: – CD (drive) – DVD (drive) – Blu-ray (drive)	**2**

Question	Answer	Marks
10(a)	**One** mark for similarity, **two** marks for differences Similarity: – Both are designed to steal personal data – They both pose as a real company/person Differences: – Pharming uses malicious code installed on hard drive – Phishing is in form of an email – Phishing requires use to follow a link / open an attachment	**3**
10(b)	– Virus – Malware	**2**
10(c)(i)	– Incorrect	**1**
10(c)(ii)	Any **four** from: – Can help prevent hacking – Can monitor incoming and outgoing traffic – Can set criteria / rules are set for traffic – Can check whether traffic meets / defies criteria rules – Can rejects any traffic that does not meet / defies criteria	**4**