



Cambridge Assessment International Education
Cambridge Ordinary Level

COMPUTER SCIENCE

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Paper 1

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MARK SCHEME

Maximum Mark: 75

Published

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This document consists of **9** printed pages.



Question	Answer	Marks
1	1 mark per correct instruction: 9 – LEFT 1 – DOWN C – OPEN 3 – CLOSE F – UP	5

Question	Answer	Marks
2	1 mark for each correct category: <i>HDD</i> – Secondary <i>RAM</i> – Primary <i>ROM</i> – Primary <i>CD-ROM</i> – Off-line <i>SSD</i> – Secondary <i>DVD-RAM</i> – Off-line	6

Question	Answer	Marks
3(a)	Any four from (Max 2 per number system) : • A binary number system is a base-2 system • A denary number system is a base-10 system • A binary number system uses 0 and 1 values • A denary number system uses 0 to 9 values • A binary number system has units/ placeholders/column headings that increase by the power of 2 • A denary number system has units/ placeholders/column headings that increase by the power of 10 • Binary has more digit <u>for the same value</u>// Denary has less digits <u>for the same value</u>	4

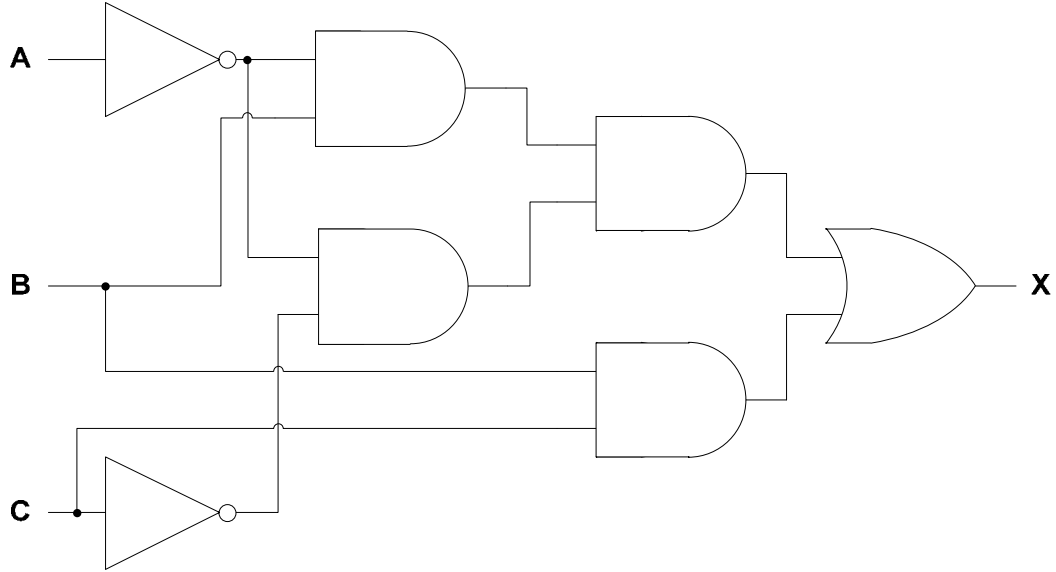
Question	Answer	Marks
3(b)	Five from: • Correct column headings / place holders by example • Correctly place a 1 or a 0 for each column • Identify the columns to be added • Add together the (denary) values identified ... • ... this will give a total which is the denary number/answer • Answer is 10	5

Question	Answer				Marks
4(a)(i)	Method 1	Tick (✓)	Method 2	Tick (✓)	2
	Serial	✓	Simplex		
	Parallel		Half-duplex		
			Duplex	✓	
4(a)(ii)	Any four from (Max 3 for serial): - Serial has <u>less/lower</u> interference - Serial is (more) reliable/accurate <u>over distances</u> - In serial the bits won't be skewed - In serial it is easier to collate the bits together again after transmission - Duplex transmits data in both directions <u>at the same time</u> - simplex/half-duplex/remaining methods won't allow read and write at same time				4

Question	Answer	Marks
4(b)	1 mark for error checking method, 2 marks for description: Checksum • A value is calculated from the data // Description of calculation • Value is transmitted with data • Value is recalculated after transmission • If the values match the data is (more likely to be) accurate Parity check • A parity bit is transmitted with each byte of data • Odd or even (parity can be used) • Counts / checks number of 1's // counts / checks to see if 1's are even // counts / checks to see if 1's are odd • (Each byte is) checked after transmission to see if it matches the odd/even parity used Automatic Repeat Request (ARQ) • Uses acknowledgement and timeout • When a device detects an error in data transmission it asks for the packet to be resent / no error detected, positive acknowledgment sent • The sending device resends the packet after the request to resend/ timeout received • This process is continuous until the packet received is correct/until the ARQ limit is reached Echo (check) • Copy of data is sent back to sender • Data is compared to see if it matches • If it does not match error detected	6

Question	Answer	Marks
5(a)	Any four from: • Data / files • Stored in a <u>text file</u> • Downloaded to a user's computer when a website is visited // webserver sends to web browser • Stored on a user's computer • Stored by a browser • Detected by the website when it is visited again	4
5(b)	Any two from: e.g. • To store personal information/data • To store login details • To save items in an online shopping basket • To track/save internet surfing habits // to track website traffic • To carry out targeted advertising • To store payment details • To customise a webpage // to store user preferences • Store progress in online games/quizzes	2

Question	Answer	Marks
6	1 mark for each correct term, in this order: • Interrupt • Compiler • ALU/Arithmetic and Logic Unit • ARQ/Automatic repeat request	4

Question	Answer	Marks
7	1 mark for each correct logic gate with the correct input(s) 	7

Question	Answer	Marks
8(a)	1 mark for correct calculation method, 1 mark for correct answer: • 2048/1024 (or 1024×2) • 2 GB	2
8(b)	• Instructions/programs/data • ... currently in use	2
8(c)	Any three from: • RAM is volatile, ROM is non-volatile • RAM is temporary, ROM is (semi) permanent • RAM normally has a larger capacity than ROM • RAM can be edited ROM cannot be edited // Data can be read from and written to RAM, ROM can only be read from.	3

Question	Answer	Marks
9(a)	- It is an <u>input</u> device - It measures/takes (physical) readings of the surrounding environment / environment by example / physical properties	2
9(b)	1 mark for each sensor, 2 marks for each description: Moisture (sensor) - To measure the water content of the soil - To alert when the soil is too dry or too wet/needs watering pH (sensor) - To measure how acidic/alkaline the soil is - To alert when there may be something polluting the soil Light (sensor) - To measure the brightness of the environment - To alert when the fruit has too little/too much light Temperature (sensor) - To measure the temperature of the environment - To alert when it is too hot/too cold for the fruit to grow Gas (sensor) - To measure the amount of CO₂/oxygen present - To alert when too much CO₂/oxygen present Humidity (sensor) - To measure the water content in the air - To alert when the air is too dry Infra-red / motion (sensor) - To measure level of infra-red/microwaves deflected - To alert to any intruders e.g. animals stealing the fruit	6

Question	Answer	Marks
10(a)	Any three from: • It is a (security) protocol • It encrypts data (sent over the web/network) • It is the updated version of SSL • It has <u>two</u> layers • It has a handshake layer • It has a record layer	3
10(b)	1 mark for each correct application, examples could include: • Online banking • Online shopping // Online payment systems • Email • Cloud based storage • Intranet/extranet • VPN • VoIP • Instant messaging (IM) // social networking	3

Question	Answer	Marks
11	1 mark for each correct missing word, in the correct order: • Plagiarism • Free software • Freeware • Shareware • Ethics	5