COMPUTER SCIENCE **9608/11**

Paper 1 Written Paper **May/June 2017**

MARK SCHEME

Maximum Mark: 75

Published

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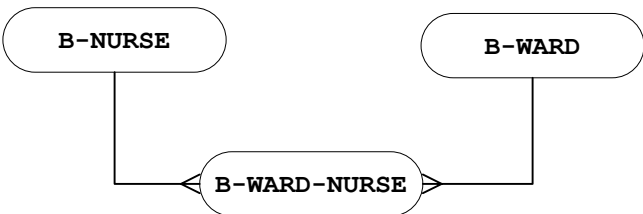
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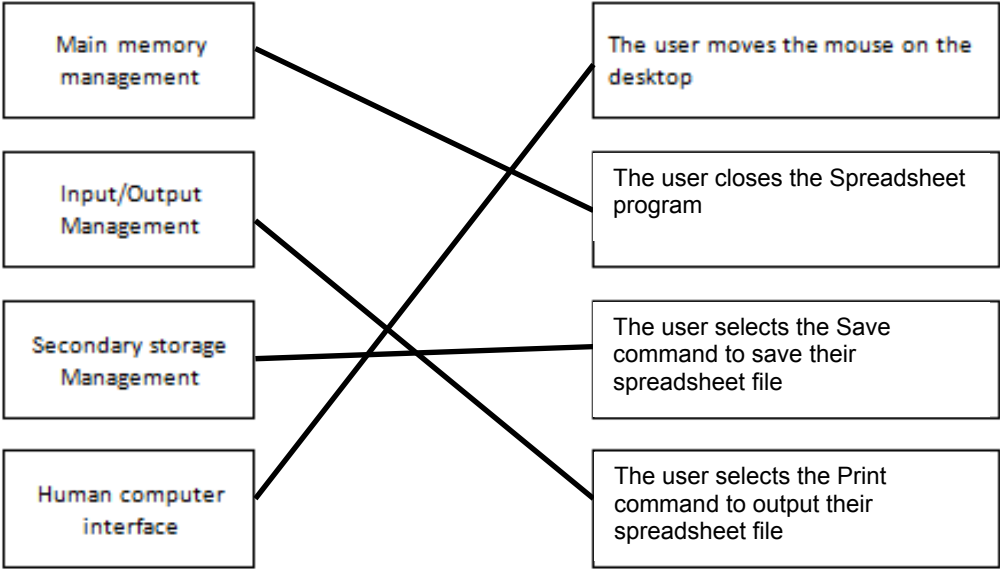
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[Turn over

Question	Answer		Marks
1(a)	Many-to-one		**1**
1(b)(i)	`A-NURSE(`<u>`NurseID`</u>`, FirstName, FamilyName, `**`WardName`**`)`		**1**
1(b)(ii)	The primary key <u>`WardName`</u> in the `A-WARD` table …	1	**2**
	… links to the foreign key <u>`WardName`</u> in the `A-NURSE` table.	1	
1(c)(i)	Many-to-many relationship		**1**
1(c)(ii)	`B-WARD-NURSE(`<u>`WardName, NurseID`</u>`)`		**2**
	Both attributes (with no additions)	1	
	Joint primary key correctly underlined	1	
1(c)(iii)			**2**
	Correct relationship between `B-NURSE` and `B-WARD-NURSE`	1	
	Correct relationship between `B-WARD` and `B-WARD-NURSE`	1	
1(d)(i)	`SELECT NurseID, FamilyName`	1	**3**
	`FROM B-NURSE`	1	
	`WHERE Specialism = 'THEATRE';`	1	
1(d)(ii)	`UPDATE `**`B-NURSE`**	1	**3**
	`SET `**`FamilyName = 'Chi'`**	1	
	`WHERE `**`NurseID = '076';`**	1	

Question	Answer		Marks
2(a)(i)			**3**

	1	A laser beam and a rotating mirror are used to draw an image of the page on the photosensitive drum.
	2	**C // The image is converted on the drum into an electrostatic charge.**
	3	Electrostatic charge attracts toner.
	4	The charged paper is rolled against the drum.
	5	**D // The oppositely-charged paper picks up the toner particles from the drum. After picking up the toner, the paper is discharged to stop it clinging to the drum.**
	6	**A // The paper passes through a fuser, which heats up the paper. The toner melts and forms a permanent image on the paper.**
	7	**B // The electrical charge is removed from the drum and the excess toner is collected.**

Question	Answer		Marks
	C in the correct place DA, AB	1 1 1	
2(a)(ii)	Inkjet printer		**1**
2(b)	Hard disk drive // HDD Solid state drive //SSD // flash memory **One** from: *Hard disk* Inexpensive per unit of storage Lar<u>ger</u> storage capacity than flash drive *Solid state storage* No moving parts / noise Robust Low latency // Fast read/write time	1 1 1 1 1 1 1	**3**

Question	Answer	Marks
3(a)	*Sampling rate* The <u>number of samples</u> taken <u>per unit time</u> // the number of times the amplitude is measured <u>per unit time</u> 1 Increasing the sampling rate will increase the accuracy / precision of the digitised sound // Increasing the sampling rate will result in smaller quantisation errors. 1	**2**
3(b)(i)	*Pixel* Smallest picture element which can be drawn 1 *Screen resolution* The number of pixels which can be viewed horizontally and vertically on the screen // or by example - A typical screen resolution is 1680 pixels · 1080 pixels. 1	**2**
3(b)(ii)	8	**1**

3(b)(iii)	*Working*: **Max <u>two</u>** from:
	
	     Number of pixels is 2048 · 512 1
	
	     One pixel will be stored as one byte 1
	
	     Number of kilobytes = (2048 · 512) / 1024 1
	
	Answer: **One** mark:
	
	Number of kilobytes = 1024 KB 1
		3

3(b)(iv)	**One** from:
	
	     Confirmation that the file is a BMP 1
	     File size 1
	     Location/offset of image data within the file 1
	     Dimensions of the image in pixels // image resolution 1
	     Colour depth (bits per pixel) 1
	     Type of compression used, if any 1
		1

Question	Answer	Marks
4(a)(i)	500	**1**
4(a)(ii)	496	**1**
4(a)(iii)	502	**1**
4(a)(iv)	86	**1**
4(b)	 0 0 0 0 0 0 0 1　　0 0 0 1 0 0 0 1 0 0 0 0 0 1 1 0　　0 1 1 0 0 0 0 1 Both correct op codes　　　　　　　1 Operand 0001 0001　　　　　　　　1 Operand 0110 0001　　　　　　　　1	**3**
4(c)	256	**1**
4(d)(i)	07 C2 07　　　　　　　　　　　　　　　1 C2　　　　　　　　　　　　　　　1	**2**
4(d)(ii)	LDI 63 LDI　　　　　　　　　　　　　　1 63　　　　　　　　　　　　　　　1	**2**

Question	Answer	Marks
5(a)(i)	Count the number of one bits in the <u>first seven</u> bit positions 1 Add a 0 or 1 to bit position 0, to make the count of one bits an <u>odd</u> number 1	**2**
5(a)(ii)	A = 1 B = 1	**1**
5(a)(iii)	<u>**Two**</u> from: A parity bit is worked out for each <u>column</u> 1 The computer checks the parity of each bit position in parity byte // the computer generates copy of the parity byte and <u>compares</u> 1 If incorrect parity then there is an error in the data received // No parity error means no error in the data received 1 The position of the incorrect bit can be determined 1	**2**
5(b)(i)		**2**
5(b)(ii)	<u>**Three**</u> from: Consider each row in sequence 1 Identify any row with incorrect parity 1 Repeat the process for each column in sequence 1 Identify where a row and column with incorrect parity intersect 1	**3**

Question	Answer	Marks
6(a)	Main memory management — The user closes the Spreadsheet program Input/Output Management — The user selects the Print command to output their spreadsheet file Secondary storage Management — The user selects the Save command to save their spreadsheet file Human computer interface — The user moves the mouse on the desktop **One** mark for each correct line from each left hand box **to max three** marks.	**3**
6(b)(i)	File compression software	**1**
6(b)(ii)	Backup software	**1**
6(b)(iii)	Disk repair software	**1**
6(b)(iv)	Anti-virus software	**1**

Question	Answer		Marks
7(a)	**Two** from: The user's web browser is the client software The requested web page has program code / script embedded <u>within it</u> This code is interpreted by the web browser	1 1 1	**2**
7(b)	**Four** from: The browser parses the URL to obtain the Domain Name The browser software passes the Domain Name to the nearest Domain Name Server (DNS) The DNS stores a list of Domain Names and matching IP addresses The DNS Name Resolver looks for the Domain Name in its database If found the corresponding IP address is returned to the originator If not found the request is forwarded to another higher level DNS The original DNS adds the returned IP address to its cache The original DNS returns the IP address to the originator The browser uses the IP address to request the required web page from the <u>web server</u> The web server retrieves the page and delivers it to the originator The browser software interprets <u>the script</u> and displays the web page	1 1 1 1 1 1 1 1 1 1 1	**Max 4**
7(c)(i)	Message1, Message2 x	1 1	**2**
7(c)(ii)	6 – 19		**1**
7(c)(iii)	11		**1**
7(c)(iv)	Checks that the product code has not be left blank // presence check on product code		**1**
7(c)(v)	**Two** checks from: **One** mark for check and **one** mark for description Range check Check the number entered is (say) between 1 and 100 Format check Checks the product code is a particular format // Checks the number has digit characters only // by example Length check The number of items has exactly five characters Existence check To ensure the product code has been assigned	 1 1 1 1 1 1 1 1	**Max 4**