

Sixth Form Entrance Examination

COMPUTER SCIENCE SPECIMEN

Time allowed: 1 hour

Name:			

INSTRUCTIONS TO CANDIDATES

- Write your name above.
- Do not open the paper until instructed to do so.
- A calculator is not allowed for this paper.
- \bullet Write clearly and fully where the questions request it.
- There are three sections in this paper. You must answer all questions in each section.
- The maximum mark for this paper is [55 marks]

November 2019

Section A - Hardware and Software

1.	Desc for e	cribe the difference between primary an each.	nd secondary storage in a computer. P	Provide one example [4]
2.	——Give	e three examples of the roles of an opera	ating system.	[3]
3.	(a)	Match the following type of media to t	cheir corresponding average capacity.	[3]
		• BluRay Disk	• 512 GB - 6 TB	
		• Hard Disk	• 4.7 GB - 8.5 GB	
		• DVD	• 25 GB - 50 GB	
		• Solid State Drive	• 4GB - 2 TB	
		• CD-ROM	• 700 MB	
	(b)	State what the abbreviation \mathbf{ROM} sta	ands for in "CD-ROM".	[1]
	(c)	Arrange the following storage types from solid state.	om slowest to fastest access speed: ma	agnetic, optical and [2]
	(d)	Explain why you would expect a BluRa	ay disk to have a higher access speed th	nan a CD-ROM. [2]
4.	Extr	ra information stored with an image is ca	alled <i>metadata</i> . Give two examples of in	mage metadata. [2]

5.	(a)	Define what a CPU is in a computer.	[1
	(b)	Briefly explain the steps involved in the Fetch-Decode-Execute cycle.	[4
6.		n brags that he uses his new headphones to only listen to "FLAC, because it is a lossless nat". Explain what Ryan means by lossless file format.	file [3

Turn over for next section

Section B - Programming

7.	Given that $a = 7$	and b	= 6, s	tate w	$_{ m hat}$	appears	on	the	screen	when	each	of th	e fol	lowing	snippets	of
	code is executed.															

```
(a) if a > 7 or b = 1 then print Yellow else print Blue end if
```

[1]

```
(b) if NOT(a>b) or (b\leq 7) then print Red else if NOT(a>b) or (b\geq 7) then print Blue else print Green end if
```

[1]

8. The following pseudocode is intended to find and display the largest number in an array of ten positive integers.

```
1: max = numbers[0]
2: for n = 0 to 9 do
3:    if max > numbers[n] then
4:         max = numbers[n]
5:    end if
6: end for
7: print max
```

The pseudocode contains an error and does not work as intended. State the line of code that contains the error and suggest a correction. [2]

9. Describe and explain two advantages of writing code using sub-routines. [4]

10. An estate agent keeps details of all the properties they have available for rent.

PropertyID	Туре	MonthlyRent	Beds	Furnished	DistanceToStation
1	Apartment	£800.00	2	Υ	0.3
2	Semi	£475.00	2	N	1.5
3	Apartment	£1150.00	3	N	0.5
4	House	£1500.00	4	Υ	0.2
5	Apartment	£900.00	2	Υ	0.3
6	Apartment	£1250.00	3	Υ	0.2
7	Semi	£550.00	3	Υ	2.4
8	House	£600.00	3	N	0.6

List the	Property	IDs o	of the	properties	that	will b	e found	by t	he f	following	SOL	queries
LIBU UIIC	I IOPCIU,	1100)I UIIC	properties	OTICO	WIII	CIOUIIG	Dy U	110 1	COLLOWNILLE	, , , , , , ,	querres.

[4]

[2]

(a) SELECT *

 $FROM\ tblRental$

WHERE MonthlyRent ≤ 550.00 OR Furnished = 'Y'

(b) SELECT *

FROM tblRental

WHERE Type = "Apartment" AND Distance ToStation < 0.3

- 11. Jimmy produces the following algorithm.
 - 1: limit = input("Please enter an upper limit")
 - 2: x = 0
 - 3: while x < limit do
 - 4: **print** *x*
 - 5: x = x + 2
 - 6: end while
 - (a) Write down the outputs for the algorithm for an input of 9.

- (b) Jimmy intended this algorithm to print the first 9 non-negative even numbers in this case. Explain what this algorithm does instead. [2]
- (c) Suggest how line 4 and line 5 can be changed to make the algorithm work as intended without changing any other part of it. [3]

12.	Write pseudocode that will perform the following:
	Ask a user to enter a number.
	If the number is between 0 and 10, output the word blue .
	If the number is between 10 and 20, output the word red .
	If the number is between 20 and 30, output the word green .
	If it is not in the accepted ranges above, output a message to say that this is not a correct colour option. $[6]$

Turn over for next section

Section C - Implications of Computer Use

13.		ficial Intelligence is increasingly used in everyday life of people, but also at more technical levels rovide advice on medical, financial and other matters.
	(a)	Provide an example of how AI is used in everyday life, or at a technical level. [1]
	(b)	Discuss the potential ethical and cultural issues associated with the application you have stated. Marks will be awarded for clarity of argument and knowledge of relevant information. [4]