Surname	Centre Number	Candidate Number
Other Names		2

wjec

GCE AS

B500U10-1





COMPUTER SCIENCE – AS component 1 Fundamentals of Computer Science

TUESDAY, 21 MAY 2019 – MORNING 2 hours

For Examiner's use only						
Question	Maximum Mark	Mark Awarded				
1.	6					
2.	8					
3.	6					
4.	9					
5.	7					
6.	6					
7.	6					
8.	10					
9.	11					
10.	8					
11.	6					
12.	6					
13.	11					
Total	100					

ADDITIONAL MATERIALS

A calculator.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball point pen.

Write your name, centre number and candidate number in the space at the top of this page.

Answer all questions.

Write your answers in the spaces provided in this booklet.

If you run out of space, use the continuation page at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the need for good English and orderly, clear presentation in your answers.

The total number of marks available is 100.

Answer all questions.

Na	ame and describe the transmission method for each of the following:	
(a	(a) Using a parallel interface to send data to a printer.	[2
••••		

••••		
•••••		
(b	(b) Sending data input from a keyboard.	[2
••••		
••••		
•••••		
••••		
,		-
(0	(c) Sending data across a network using a switch.	[2
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Describe (he function of	ioui oi tile i	nam comp	onents in	a content	porary Cr	o architect	uit
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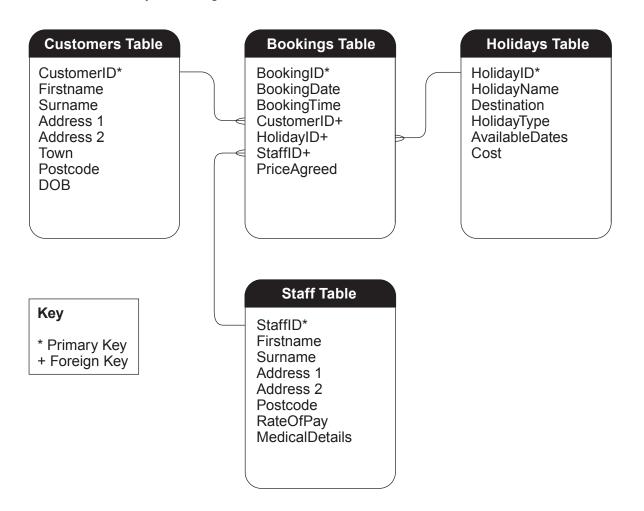
Describe three methods	s used to ensure file security.	[6]

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[3]

4. Happy Hols travel agents uses the following database structure to store details about its customers, holidays, bookings and staff.



Describe the features of this type of database structure.

(a)

()	-	
		.

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(ii) Descri	be the benefits and drawbacks of this type of database structure.	[4]
Using an exa	ample from the structure on page 5, give one advantage of difference ent views of the data in this database.	nt users [2]
Advantage .		

Write an algorithm, using pseudo-code, which will allow chemistry students to input the group number (1-18) and the period number (1-7) of an element in the partially complete periodic table below.

PeriodicTableArray

										Gro	oup								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	1	Н																	Не
	2	Li	Ве											В	С	N	0	F	Ne
0	3	Na	Mg											Al	Si	Р	S	CI	Ar
Period	4	K	Ca	Sc	Ti	V	Cr	Mn	Fe	Со	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
_	5	Rb	Sr	Υ	Zr	Nb	Мо	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Те		Xe
	6	Cs	Ва	La	Hf	Та	W	Re	Os	lr	Pt	Au	Hg	TI	Pb	Bi	Ро	At	Rn
	7	Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	FI	Мс	Lv	Ts	Og

Your algorithm should output the chemical symbol (e.g. Li) or a suitable error message if the element does not exist for the numbers entered.

Your algorithm should be written using self-documenting identifiers.	[7]

Turn over.

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6.	Clearly showing each step, and identities:	simplify the following	Boolean	expression	using	Boolean	algebra [6]
		$R.(\overline{S} + R) + Q.(\overline{Q} +$	P) + Q.(1	+ P)			

11.(0 + 11) + Q.(Q + F) + Q.(1 + F)

Describe the use of three types of utility software.	[6]	Examin only

			Mar	ıtissa						Exp	onent		
loating	-point f	orm.		of pos	sitive re	eal nur	nbers th	nat can	ı be st	ored ir	this r	normalise	
show a	ıll youı	worki	ngs.									[0	6]
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	12	
(b)	Using the number 11.10111_2 , describe truncation and rounding to two binary places, and calculate their effect upon accuracy in terms of their absolute errors. [4]	Examiner only
•••••		

Examiner only

9. A program written using a high-level programming language is intended to add five numbers that are input by a user. This program is to be compiled.

```
Start addProc
2
   number is integer
3
   a is integer
4
  total is integer
5
   a = 0
7
   for i = 1 to 5
      output "Please enter next number"
8
9
      ipnut number
10
      a = a + number
11
   next i
12
13
   total = a
14
   output "The total = ", total
15
16
   End addProc
```

(a) Line 10 is split into the following tokens and all whitespace is removed:

Token					
a					
=					
a					
+					
number					

	Name the compilation stage where this would occur.	[1]
(b)	Identify the error that exists in this program and state at which stage of the compilar process it would be detected.	tion [2]
••••		••••••
		••••••

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(c)	Memory locations are allocated to the variables number, a and total. Name the compilation stage where this would occur.	e Examiner only
(d)	Name the compilation stage at which the inefficient use of memory in Line 13 would be addressed.	pe 1]
(e)	Describe the differences between high-level and low-level languages.	 6]

Describe the use	e of other tools av	ailable to a prog	grammer in an ID	lopment Environr E.	[8]

miner nly

(a)	Identify three potential threats to computer systems.	[3]	Exa
·····			
• · · · · · · · · · · ·			
•••••			
(b)	Describe contingency planning for disasters which affect computer systems.	[3]	
	Describe contingency planning for disasters which affect computer systems.		

Examin	e
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		E
13.	The role of a systems analyst is to develop computer solutions to given problems.	
	One consideration for a systems analyst when developing a new solution is the human-computer interaction (HCI). Explain the different types of HCI that could be considered to suit a variety of different users in different environments.	
	Discuss different changeover methods a systems analyst may consider. [11]	

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END OF PAPER

For continuation only.	Examiner only