GCSE Computer Science

Mock Exam February 2017

Topics Covered: Systems Architecture, Memory, Storage devices, Algorithms, Number systems and Logic gates.

Name:

Teacher:

Mr Waller / Mr Sorhaindo

Question	Marks available	Marks awarded
1	3	
2	8	
3	7	
4	8	
5	4	
6	4	
7	4	
Total	**38**	

1 A typical smart phone is a computer system with input, output and storage devices.

State one input device, one output device and one secondary storage device that are built into a smart phone. **[3]**

Input device:

Output device:

Storage device:

2 Quinn's current computer specification are shown below

1.5 GHz Dual Core Processor 1GB RAM 100GB Hard Drive 64KB Cache Touchscreen Integrated camera and speakers 2 × USB 3.0 ports 2 × USB 2.0 ports Blu-ray drive 2GB Graphics Card

(a) Describe the benefits of a dual core processor over a single core processor. **[2]**

(b) Quinn is considering upgrading the RAM.

(i) Describe two differences between RAM and ROM. **[4]**

Difference1

Difference 2

(ii) Quinn has decided to upgrade the RAM on his computer. Explain why this would improve the computer's performance. **[2]**

3 Gareth has a satellite navigation system (Sat Nav) in his car that uses RAM and ROM.

(a) The table below lists some characteristics of computer memory. Tick (✓) **one** box in each row to show whether each of the statements is **true** for the RAM or ROM in Gareth's Sat Nav. **[3]**

	RAM	**ROM**
Stores the boot up sequence of the Sat Nav.		
The contents are lost when the Sat Nav is turned off.		
Holds copies of open maps and routes.		

(b) Gareth's Sat Nav contains an embedded system. Define what is meant by an 'embedded system'. **[1]**

(c) Identify three devices, other than a Sat Nav, that contain embedded systems. **[3]**

4 Vicky has been on holiday and has taken lots of photos. The memory in her camera is now full and she needs to transfer her photos to an external secondary storage device.

(a) Define what is meant by 'secondary storage'. **[1]**

(b) Identify the three common storage technologies Vicky can choose from. **[3]**

(c) State four characteristics of secondary storage devices that Vicky should consider when choosing a device. **[4]**

5 The area of a circle is calculated using the formula $\pi \times r^2$, where π is equal to 3.142 and r is the radius.

Finn has written a program to allow a user to enter the radius of a circle as a whole number, between 1 and 30, and output the area of the circle.

```
01 int radius = 0
02 real area = 0.0
03 input radius
04 if radius < 1 OR radius > 30 then
05 print ('Sorry, that radius is invalid')
06 else
07 area = 3.142 * (radius ^ 2)
08 print (area)
09 end if
```

(a) Identify two variables used in the program. **[2]**

(b) (i) Identify one item in the program that could have been written as a constant. **[1]**

(ii) Give one reason why you have identified this item as a constant. **[1]**

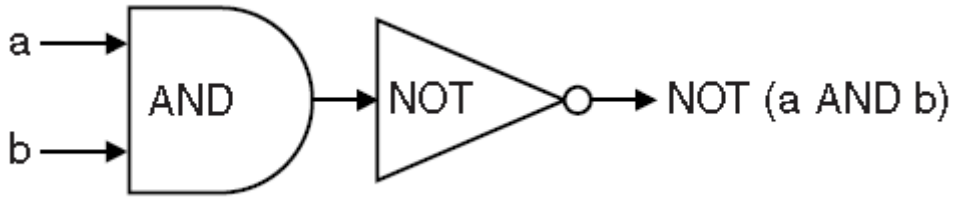
6 **(a)** Order the following units from smallest to largest: **[1]**

GB bit PB byte nibble MB

(b) Convert the decimal number 191 into an 8 bit binary number. **[1]**

(c) Convert the hexadecimal number 3E into a decimal number. You must show your working. **[2]**

7 The following logic diagram shows the expression NOT (a AND b).



Complete the missing boxes in the truth table below to show the value of NOT (a AND b) that will be output for each possible set of values of a and b. **[4]**

a	b	NOT (a AND b)
0	0	1
0		1
1	0	