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**St. Nicholas College Secondary School Naxxar**  
**Half-Yearly Examinations**  
**February 2016**

Track/Level

FORM 3

Computing

TIME: 1½ hours

Name \_\_\_\_\_

Class \_\_\_\_\_

*Attempt all questions.*

**Calculators are not allowed.**

1. Name **WHICH** type of computer has the following properties.

*The first one has been done for you.*

[5]

a. Similar to a desktop computer but portable: laptop

b. The most powerful computer: \_\_\_\_\_

c. The type of computer used by large companies, such as banks: \_\_\_\_\_

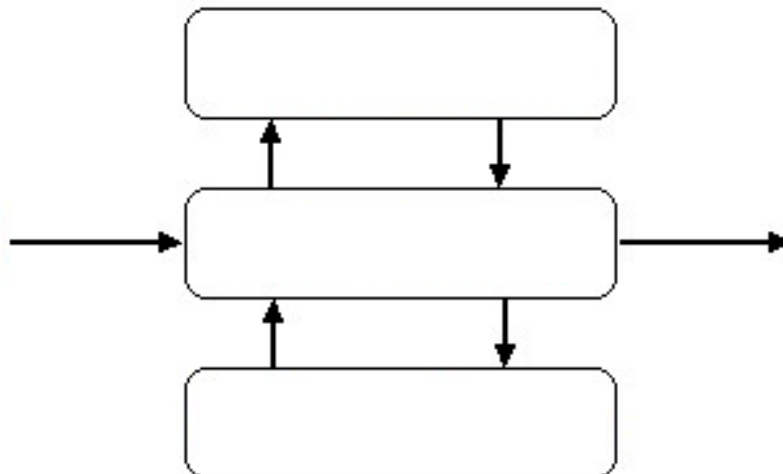
d. The smallest, portable computer: \_\_\_\_\_

e. A computer that is found inside an electronic device: \_\_\_\_\_

f. A computer similar to a laptop but smaller: \_\_\_\_\_

2. **Label** the following diagram to **explain the computer system.**

[5]



3. **Define** the following terms:

[5]

- a. Data: \_\_\_\_\_
- b. Information: \_\_\_\_\_
- c. Hardware: \_\_\_\_\_
- d. Software: \_\_\_\_\_
- e. Peripherals: \_\_\_\_\_

4. **Answer** the following questions about buses.

[4]

a. **Which** are the **THREE** buses that can be found in a computer system?

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_

b. **What** is the **purpose** of each bus?

- i. \_\_\_\_\_: \_\_\_\_\_
- ii. \_\_\_\_\_: \_\_\_\_\_
- iii. \_\_\_\_\_: \_\_\_\_\_

c. **Which** are the **two** buses found in the **system bus**?

- i. \_\_\_\_\_
- ii. \_\_\_\_\_

5. **Fill in** the following table, showing different **storage capacity units**.

[5]

8 _____	1 Byte
1024 Bytes	1 _____ Byte
1024 _____ Bytes	1 Mega Byte
1024 Mega Bytes	1 _____ Byte
1024 _____ Bytes	1 Tera Byte

6. **Fill in** the blanks using the words **provided**.

[10]

*extreme*                      *continuously*                      *two-state*                      *range*                      *digital*  
*analogue*                      *closer*                      *electronic*                      *samples*                      *changed*

\_\_\_\_\_ signals are input into the computer. These can either be \_\_\_\_\_ or \_\_\_\_\_ and are measured in voltages. While analogue signals can vary \_\_\_\_\_ and smoothly between the given \_\_\_\_\_, digital signals can only be either of the two \_\_\_\_\_ values.

Analogue signals that are input into the computer need to be \_\_\_\_\_ to digital, since computers can only understand the latter. The ADC (Analogue to Digital Converter) is used to convert analogue signals to digital, while the DAC (Digital to Analogue Converter) converts digital signals to analogue.

When converting from analogue to digital, \_\_\_\_\_ are taken from the original signal each of which is then considered as either of the extreme values, depending on which it is \_\_\_\_\_ to.

The computer is considered to be a \_\_\_\_\_ device, because at its most basic level it can only understand two states, i.e. on or off.

7. **Convert** the following numbers between binary, decimal and hexadecimal.

[12]

Decimal	Binary	Hexadecimal
54 <sub>10</sub>		
	01001011 <sub>2</sub>	
		9D <sub>16</sub>

*Working Space*

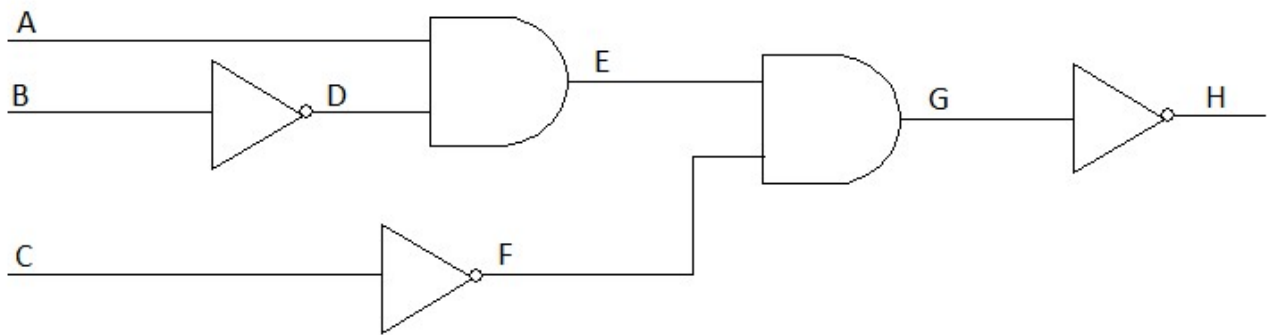
8. Which coding system has the following properties?

[5]

- a. Uses 7 bits to represent the characters: \_\_\_\_\_
- b. It can represent up to 127 characters: \_\_\_\_\_
- c. Uses 8 bits to represent the characters: \_\_\_\_\_
- d. The coding system that is used nowadays: \_\_\_\_\_
- e. Can represent  $2^{16}$  characters: \_\_\_\_\_

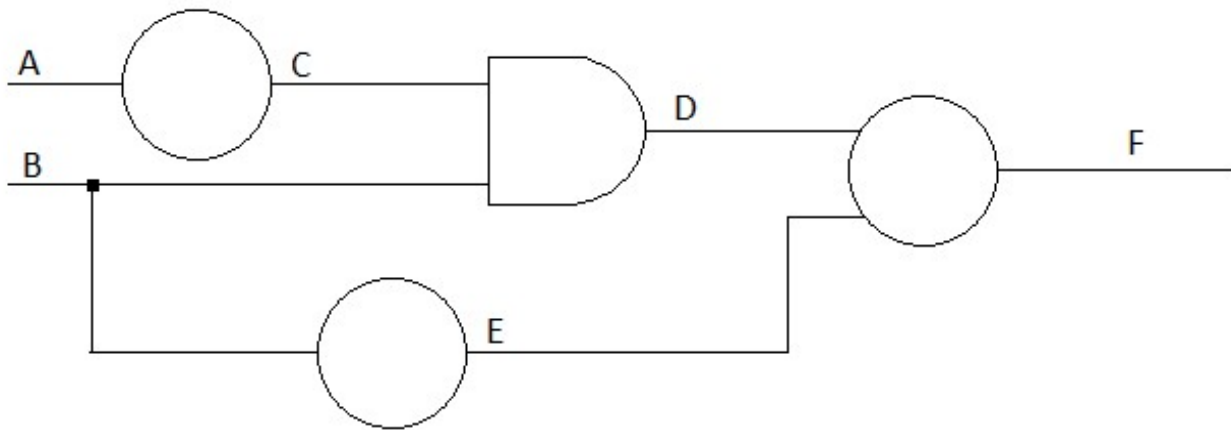
9. Fill in the truth table for the following logic circuit.

[5]



A	B	C	D	E	F	G	H
0	0	0					
0	0	1					
0	1	0					
0	1	1					
1	0	0					
1	0	1					
1	1	0					
1	1	1					

10. Determine the **unlabelled** logic gates in the following circuit and then **complete the truth table**. [7]



A	B	C	D	E	F
0	0		0		1
0	1				
1	0				
1	1				

11. Put the following memory **in order** starting with the fastest ones. [4]

	Secondary storage
	Main memory
	CPU registers
	Cache

12. **Match** the following different **types of ROM** with their **definitions**. [3]

1	ROM		You can only write once to this ROM.
2	PROM		Data can be written and deleted as one needs to.
3	EPROM		The user can only read from this type of ROM not write to it.
4	EEPROM		Data can be deleted from this ROM but only as a whole.

13. **Fill in** the following text using the words **provided**.

[10]

*read  
written*

*RAM  
Bootstrap*

*permanently  
lost*

*largest  
ROM*

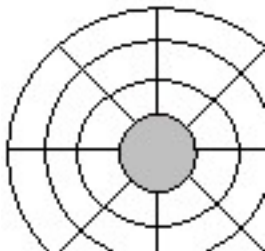
*read  
switched*

Main memory consists of \_\_\_\_\_ and \_\_\_\_\_. Data can be both \_\_\_\_\_ from and \_\_\_\_\_ to RAM (Random Access Memory), but it can only be \_\_\_\_\_ from ROM (Read Only Memory). RAM is a volatile memory, meaning that data is \_\_\_\_\_ once the computer is switched off, while ROM is non-volatile and data is stored on it \_\_\_\_\_. The \_\_\_\_\_ loader is stored on ROM. Its purpose is to load the Operating System when the computer is \_\_\_\_\_ on, hence its importance of being non-volatile. RAM is the \_\_\_\_\_ part of the main memory and stores the data and instructions that the CPU is using at the time.

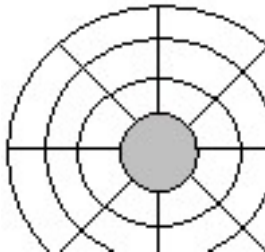
14. **Draw** on the following diagrams to show:

[3]

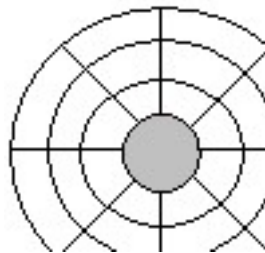
a. A track:



b. A sector:



c. A cluster:



15. Explain what the **FAT** and **NTFS** are. [2]

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16. Put the following storage devices **in order** according to their capacity, starting from the lowest and **write their typical capacity** in the appropriate column. [7]

		Typical capacity
	Hard disk	
	CD	
	DVD single sided – single layer	
	DVD single sided – double layer	
	BD single sided	
	BD double sided	
	Pen drive	

17. Name **TWO** differences between the **hard disk** and the **solid state drive**. [2]

a. \_\_\_\_\_  
\_\_\_\_\_

b. \_\_\_\_\_  
\_\_\_\_\_

18. Define: [3]

a. Direct access:  
\_\_\_\_\_

b. Sequential access:  
\_\_\_\_\_

c. Access time:  
\_\_\_\_\_

19. Choose ONE **input device** and write the following about it:

[3]

Input device: \_\_\_\_\_

a. **Use:** \_\_\_\_\_

b. **Advantage:** \_\_\_\_\_

c. **Disadvantage:** \_\_\_\_\_

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End of Paper