

**St Edward's College Malta**  
**Mid-Year Examinations February 2020**



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**Year 11                      Computing Paper 1                      Time: 2 hours**

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**Name and Surname**

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**Instructions to Students:**

1. Do not open this examination paper until instructed to do so.
  2. Write your name and surname on this page.
  3. Read all instructions and questions carefully.
  4. Answer ALL questions in the spaces provided.
  5. Diagrams must be drawn in pencil.
  6. Leave the last 10 minutes for revision of paper.
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**For teacher's use only**

**Mr E. Attard Cassar**

<b>Question</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>Total</b>
<b>Obtained</b>													
<b>Allotted</b>	<b>6</b>	<b>10</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>7</b>	<b>12</b>	<b>7</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>15</b>	<b>100</b>

1. Question about data representation

a. Convert the **decimal** number 71 to **binary**.

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[1]

b. Convert the binary number 101100011 to decimal when:

i. The number is **unsigned**.

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[1]

ii. The number is **two's complement**.

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[1]

c. Why are **hexadecimal** numbers useful in computing?

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[1]

d. Two character-codes are **ASCII** and **UNICODE**. Explain the difference between them.

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[2]

2. This question is about operating systems.

a. Give an example each of a **sharable** and **non-sharable** resources.

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[2]

b. What is **multi-tasking**?

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[2]

c. How does the **Batch** operating system work?

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[2]

d. What is the difference between **critical** and **non-critical** real-time operating system?

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[2]

e. Describe one **scheduling algorithm**.

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[2]

3. This question is about a logic circuit.

a. A logic circuit is made up of three logic gates X, Y and Z (each gate can be a NOT, an AND or an OR). The inputs are A, B and C. From the table below find out the logic gates X, Y and Z. [3]

A	B	C	X	Y=B?X	Z=A?Y
0	0	0	1	0	0
0	0	1	0	0	0
0	1	0	1	1	1
0	1	1	0	0	0
1	0	0	1	0	1
1	0	1	0	0	1
1	1	0	1	1	1
1	1	1	0	0	1

b. Draw the **logic circuit diagram**.

[2]

c. Find the value of the expression  $a'(b+c') + ac$  when  $a=0$ ,  $b=1$  and  $c=0$ .

\_\_\_\_\_ [1]

4. The following sentences refer to an object in the following list. Which object is it?  
The list is: **buffer, RAM, ROM, pen drive, port, system clock, CPU.**

a. It performs the fetch-decode-execute cycle.

\_\_\_\_\_ [1]

b. It holds programs while they are being executed.

\_\_\_\_\_ [1]

c. It is a kind of secondary storage.

\_\_\_\_\_ [1]

d. It holds the bootstrap loader.

\_\_\_\_\_ [1]

e. It synchronizes the operations on the computer.

\_\_\_\_\_ [1]

f. It serves as temporary memory used when a device sends information to another device.

\_\_\_\_\_ [1]

g. An interface to which you can connect a device.

\_\_\_\_\_ [1]

5. This is a table in a **relational database**:

ITEMS (IdItem, Description, ExpiryDate, Cost, IdAgent, IdManufacturer)

a. Give the **data type** of each field.

\_\_\_\_\_  
\_\_\_\_\_ [2]

b. Name a field that can serve as **primary key**.

\_\_\_\_\_ [1]

c. This table appears to be linked to other tables. How many are these tables and what information do they hold?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

- d. Explain the following terms: **query**, **one-to-many relationship** and **fixed-length record**.

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[3]

6.

- a. Draw a **flowchart** of the following program snippet. [2]

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for (int i=1; i<=5; i++)  
{  
    System.out.println (i*3);  
}
```

- b. Write the above program snippet using a **while loop**.

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[3]

- c. Give an example of a **condition**.

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[1]

d. Give an example of a **declaration**.

\_\_\_\_\_ [1]

7.

a. Explain what a **client-server network** is.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

b. Explain what a **peer-to-peer** network is.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

c. One measure to combat computer misuse is passwords. Mention another **three**.

\_\_\_\_\_  
\_\_\_\_\_ [3]

d. Mention **two** advantages of networked computers.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

e. Explain the terms: **modem**, **video conferencing** and **coaxial cable**.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [3]

8. The **system development life cycle** is a process where a new system is built, used, corrected until it becomes obsolete.

a. Name **two** kinds of information that are included in a feasibility study.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [2]

b. During the analysis phase **interviews** can be used to gather information. Mention **two** other methods that can be used to learn about the old system.

\_\_\_\_\_  
\_\_\_\_\_[2]

c. One technique during the design of a program is **pseudocode**. What is it?

\_\_\_\_\_  
\_\_\_\_\_[1]

d. One changeover method to pass from the old system to the new system is the **pilot** changeover. Name another **two**.

\_\_\_\_\_  
\_\_\_\_\_[2]

9. Define the following software terms:

a. Mail merge:

\_\_\_\_\_  
\_\_\_\_\_[2]

b. System software:

\_\_\_\_\_  
\_\_\_\_\_[2]

c. Utilities

\_\_\_\_\_  
\_\_\_\_\_[2]

d. Clipboard

\_\_\_\_\_  
\_\_\_\_\_[2]

10. Files can be **direct access** or **sequential access**.

a. Explain what direct access and sequential access mean.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_[2]

b. Would you expect a **payroll file** to be direct or sequential? Why?

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[2]

c. Would you expect files used in **Internet Banking** to be direct or sequential? Why?

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[2]

d. How can a sequential file on a hard disk be made direct?

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[1]

11. Input is a delicate process since errors in input will be propagated as errors in output.

a. Explain what **validation** and **verification** are:

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[2]

b. Give two particular examples of **input validation methods**.

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[2]

c. What is **MICR**? Name one advantage and one disadvantage of it.

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[3]

12. Programs are often created in a high-level language.

a. What is the difference between a **compiler** and an **interpreter**?

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[2]



b. What is the difference between **object code** and **source code**?

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[2]

c. Define the following terms.

i. API

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[1]

ii. Debugger

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[1]

iii. IDE

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[2]

iv. Dry run

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[1]

d. What is the difference between **syntax error**, **logic error** and **run-time error**? Give an example in Java of each.

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[6]