



**L-Università  
ta' Malta**

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE  
EXAMINATIONS BOARD

**SECONDARY EDUCATION CERTIFICATE LEVEL  
2018 SUPPLEMENTARY SESSION**

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SUBJECT:	<b>Information Technology</b>
PAPER NUMBER:	Synoptic – Unit 3
DATE:	1 <sup>st</sup> November 2018
TIME:	10:00 a.m. to 12:05 p.m.

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**THIS PAPER SHOULD BE RETURNED TO THE INVIGILATOR  
AFTER THE EXAMINATION.**

**Scenario**

Mr Cachia is the owner of a rather successful bookstore in Sliema. He has noticed that over the years, the computers in his store have slowed down considerably and have been breaking down more often. Mr Cachia has hired you to help him fix the problem.

**Question 1**

**K1 (8 marks)**

After examining Mr Cachia’s setup, you have come to the conclusion that he will need to upgrade his computers.

State **FOUR** reasons why computers need to be upgraded.

Reason 1:

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(2)

Reason 2:

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(2)

Reason 3:

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(2)

Reason 4:

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(2)

**Question 2****K2 (8 marks)**

Before any of Mr Cachia's computers can be upgraded, it is important to ensure that the workplace is following all the Health and Safety regulations.

Read the regulations listed below and mark whether they are **TRUE** or **FALSE**.

	<b>Regulations</b>	<b>TRUE/ FALSE</b>
a)	Firefighting equipment should be clearly visible and close at hand.	
b)	Eating and drinking in the lab is permitted.	
c)	Smoking is permitted as long as the person stays close to a window.	
d)	Equipment should be properly maintained and organized.	
e)	The work room should be properly ventilated.	
f)	No trailing cables should be left on the floor.	
g)	Wearing all kinds of jewellery is permitted.	
h)	All fire exits should be clearly marked.	

***Please turn the page.***

**Question 3****K4 (12 marks)**

One of Mr Cachia's computers requires completely new components. After careful consideration you have chosen the motherboard in Figure 1 below:

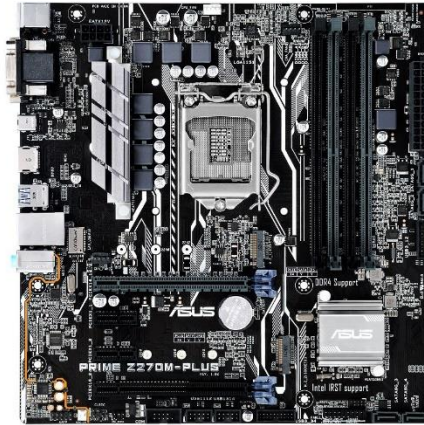


Figure 1: Motherboard




Source: <https://tinyurl.com/y7elhjlo>

<b>Name</b>	Prime Z270M Plus
<b>Form Factor</b>	ATX
<b>CPU Socket</b>	1151
<b>Chipset</b>	Intel Z270
<b>Memory Type</b>	DDR4
<b>Memory Speed</b>	DDR4 – 2666 DDR4 – 2800 DDR4 – 3000 DDR4 – 3200
<b>Maximum Memory</b>	4 X 16GB = 64GB
<b>Expansion Slots</b>	TWO PCIe 3.0 x 1 ONE PCIe 3.0 x 16 TWO M.2
<b>Internal I/O</b>	1 x 24pin 1 x 8pin 1 x CPU Fan Connector 4 x SATA 3 6GB/s

Based on the information shown in the table above, answer the following questions:




a) Which one of these three CPUs in Figure 2-4 is compatible with the motherboard? **A, B or C?**

Answer: \_\_\_\_\_ (3)

	<b>A</b>	<b>B</b>	<b>C</b>
	 <p>Figure 2: Core i7 Source: <a href="https://tinyurl.com/y7elhjlo">https://tinyurl.com/y7elhjlo</a></p>	 <p>Figure 3: Core i9 Source: <a href="https://tinyurl.com/y7elhjlo">https://tinyurl.com/y7elhjlo</a></p>	 <p>Figure 4: Ryzen Source: <a href="https://tinyurl.com/y7elhjlo">https://tinyurl.com/y7elhjlo</a></p>
<b>Name:</b> <b>Socket:</b> <b>Number of Cores:</b> <b>Speed:</b>	Intel Core i7 8700 S1151 6 3.2GHz	Intel Core i9 7900X S2066 10 3.3GHz	AMD Ryzen 7 1700 S AM4 8 3.0GHz

b) Which one of the following RAM sticks in Figures 5-6 would be compatible with the motherboard in Figure 1? **A, B or C?**


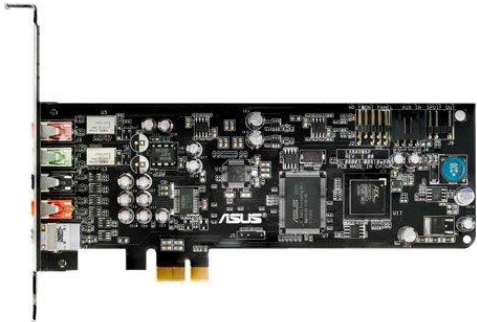
Answer: \_\_\_\_\_ (3)

	<b>A</b>	<b>B</b>	<b>C</b>
	 <p>Figure 5: DDR4 SODIMM Source: <a href="https://tinyurl.com/y7elhjlo">https://tinyurl.com/y7elhjlo</a></p>	 <p>Figure 6: DDR4 DIMM Source: <a href="https://tinyurl.com/y7elhjlo">https://tinyurl.com/y7elhjlo</a></p>	 <p>Figure 7: DDR3 DIMM Source: <a href="https://tinyurl.com/y7elhjlo">https://tinyurl.com/y7elhjlo</a></p>
<b>Capacity:</b> <b>Type:</b> <b>Speed:</b>	16GB DDR4 SODIMM 2400MHz	16GB DDR4 DIMM 2666MHz	16GB DDR3 DIMM 1333MHz

- c) Which of the following expansion cards in Figures 6 and 7 would be compatible with the motherboard shown in Figure 1?
- i. Graphics Card (A) only
  - ii. Sound Card (B) only
  - iii. Both (A and B)

Answer: \_\_\_\_\_

(3)

EVGA NVIDIA GeForce GTX1060 (A)	ASUS Xonar DSX (B)
 <p>Figure 8: Graphics Card Source: <a href="https://tinyurl.com/y7elhjlo">https://tinyurl.com/y7elhjlo</a></p>	 <p>Figure 9: Sound Card Source: <a href="https://tinyurl.com/j3vnpbn">https://tinyurl.com/j3vnpbn</a></p>
<p>VRAM: 3GB GDDR5 Speed: 1607MHz Interface: PCIe 3.0 x 16</p>	<p>Channels: 7.1 Interface: PCIe 3.0 x1</p>

d) Mr Cachia would like to have as much storage space as possible. How many of the hard disks drives in Figure 10 would it be possible to connect to the motherboard in Figure 1?

Answer: \_\_\_\_\_

(3)



Figure 10: Hard disk Drive

Source: <https://tinyurl.com/y7elhjlo>

<b>Name:</b>	Seagate Barracude
<b>Size:</b>	3.5"
<b>Capacity:</b>	2TB
<b>Interface:</b>	SATA 3

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**Question 4**

**C2 (10 marks)**

a) Look at Figure 11 below:

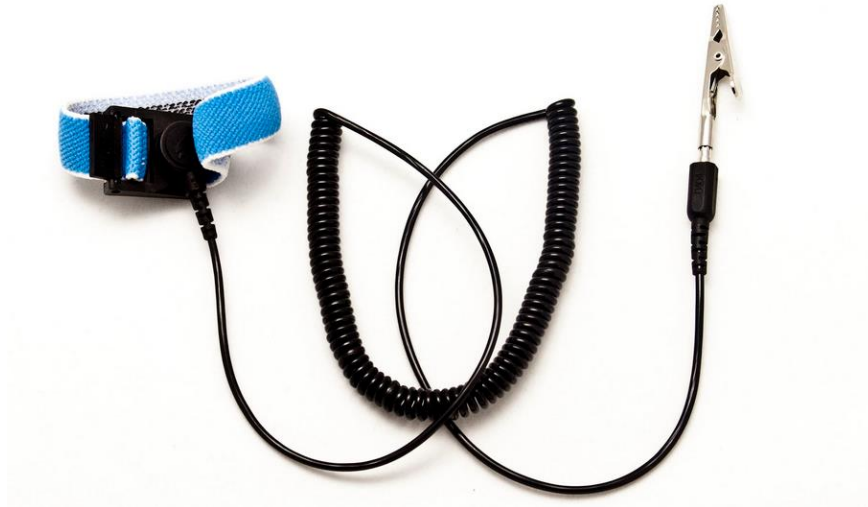


Figure 11

Source: [https://www.flickr.com/photos/mac\\_users\\_guide/4082513108/in/photostream/](https://www.flickr.com/photos/mac_users_guide/4082513108/in/photostream/)

i. What is the name of the object shown in Figure 11?

\_\_\_\_\_ (2)

ii. Why is using the object above a necessary precaution when installing, replacing or upgrading electronic components?

\_\_\_\_\_  
\_\_\_\_\_ (2)

b) For each scenario below discuss **ONE** different precaution from the one identified above which needs to be taken.

i. Installing new RAM sticks on the motherboard.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (2)

ii. Replacing an existing hard disk.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (2)



iii. Installing a new motherboard

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ (2)

**Question 5**

**C4 (9 marks)**

Mr Cachia has identified a number of problems with his computers. For each problem listed below, identify the component which needs to be upgraded. Provide a reason for each answer.

a) Mr Cachia has noticed that one of his computers slows down considerably when multiple programs are open at once.

**Component to be upgraded:** \_\_\_\_\_ (1)

**Reason:** \_\_\_\_\_

\_\_\_\_\_ (2)

b) Mr Cachia’s personal PC is displaying the following error message:

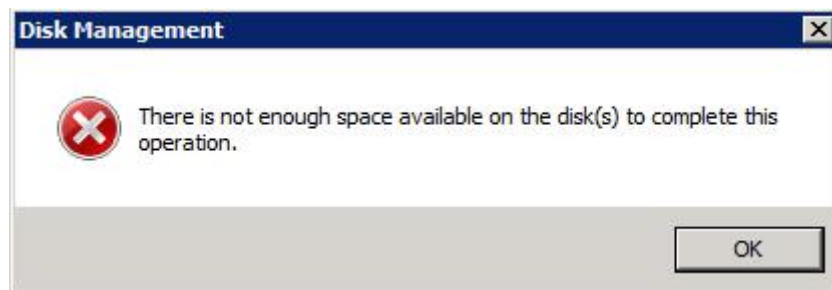


Figure 12: Error Message  
Source: <https://tinyurl.com/y9q24np2>

**Component to be upgraded:** \_\_\_\_\_ (1)

**Reason:** \_\_\_\_\_

\_\_\_\_\_ (2)

c) One of Mr Cachia’s computers gets extremely hot after being in use for a short period of time.

**Component to be upgraded:** \_\_\_\_\_ (1)

**Reason:** \_\_\_\_\_

\_\_\_\_\_ (2)

**Question 6****A1 (10 marks)**

Before Mr Cachia's computers can be upgraded certain preparations are necessary. One of the first steps includes finding and checking the resources available.

a) Name **FOUR** different resources one should have before upgrading a computer.

i. Resource 1:

\_\_\_\_\_  
\_\_\_\_\_ (1)

ii. Resource 2:

\_\_\_\_\_  
\_\_\_\_\_ (1)

iii. Resource 3:

\_\_\_\_\_  
\_\_\_\_\_ (1)

iv. Resource 4:

\_\_\_\_\_  
\_\_\_\_\_ (1)

b) Outline **THREE** procedures that need to be carried out as preparation before being able to upgrade a computer.

i. Preparation 1:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (2)

ii. Preparation 2:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (2)

iii. Preparation 3:

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(2)

**Question 7**

**A2 (14 marks)**

One of Mr Cachia's computers is using the motherboard as shown in Figure 13 below:

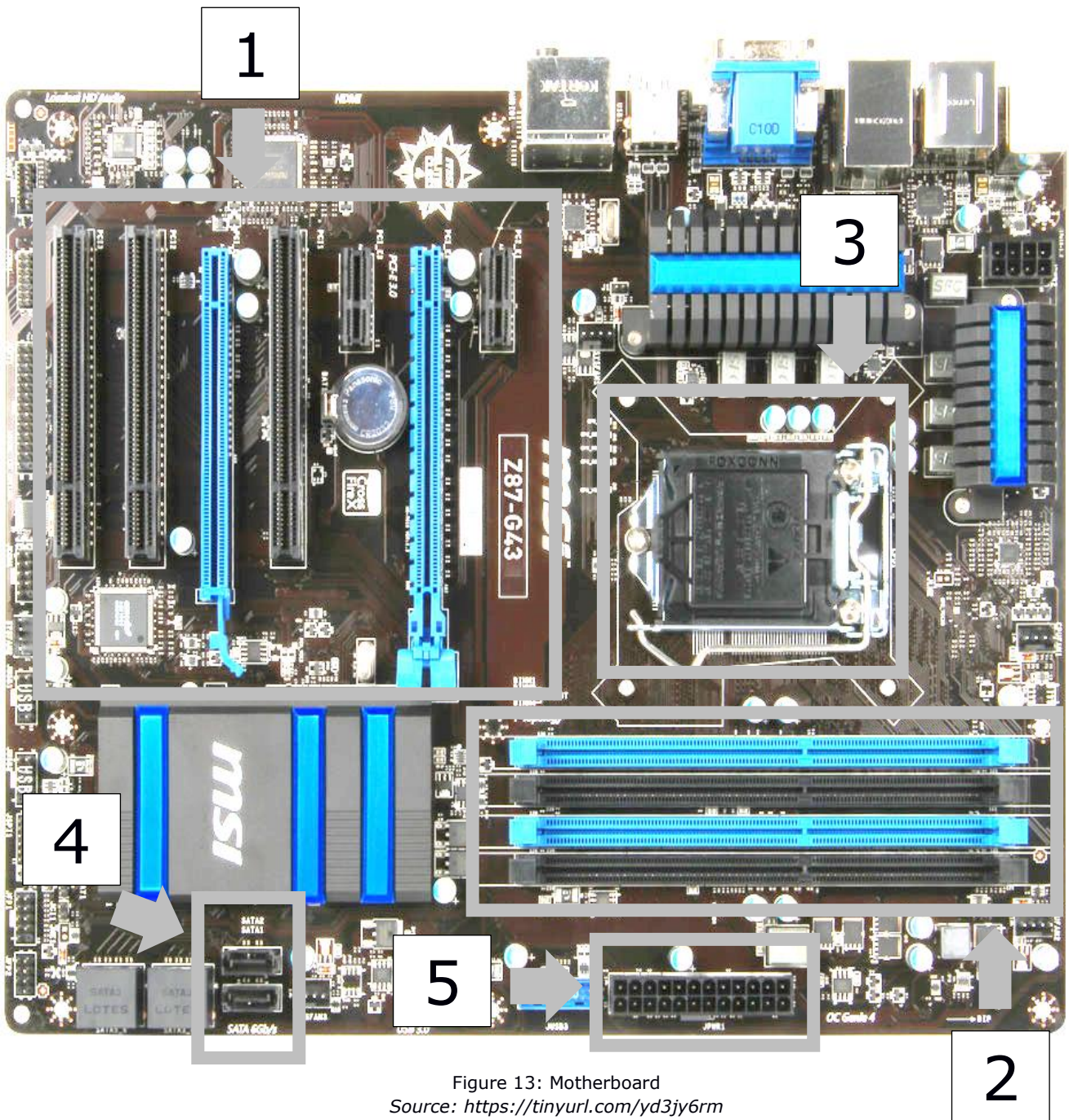


Figure 13: Motherboard  
Source: <https://tinyurl.com/yd3jy6rm>

a) Indicate where each of the following components would be connected by writing down the number shown on the motherboard next to each one. (4)

Components Name	Slot/Connector/Socket number
CPU	
PSU	
TV Tuner Card	
Graphics Card	
Hard Disk	
Sound Card	
SSD	
RAM	

b) Write down the steps necessary to install the following components:

i. Hard Disk:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ (2.5)

ii. Graphics Card:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ (2.5)

iii. RAM:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ (2.5)

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iv. CPU:

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(2.5)

**Question 8****K6 (3 marks)**

Once the upgrade is complete, it is important to ensure that Mr Cachia's computers are working properly. Describe how the following tools can help in determining whether the upgrade was successful.

a) BIOS in case of CPU upgrade:

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(1.5)

b) OS File Manager in case of Hard Disk upgrade:

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(1.5)

**Question 9****K8 (8 marks)**

The upgrade of one of Mr Cachia's computers went wrong and a number of BIOS beeps can be heard on start-up. Identify from the list below **FOUR** causes which could lead to an unsuccessful upgrade.

CPU inserted in the appropriate slot, internally broken cables, Hard Disk drive not tightly secured to case chassis, component dead-on-arrival, memory inserted in the appropriate orientation, installing component in the wrong slot, wrongly inserted connections
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a) Cause 1: \_\_\_\_\_ (2)

b) Cause 2: \_\_\_\_\_ (2)

c) Cause 3: \_\_\_\_\_ (2)

d) Cause 4: \_\_\_\_\_ (2)

**Question 10**

**C5 (12 marks)**

Maintenance is important because it keeps the computer system working correctly and in optimal shape. Explain **FOUR** different types of maintenance required in an office environment. For each maintenance type you are to provide **ONE** practical example.

Maintenance Type 1: \_\_\_\_\_  
\_\_\_\_\_ (2)

Example for Maintenance Type 1: \_\_\_\_\_  
\_\_\_\_\_ (1)

Maintenance Type 2: \_\_\_\_\_  
\_\_\_\_\_ (2)

Example for Maintenance Type 2: \_\_\_\_\_  
\_\_\_\_\_ (1)

Maintenance Type 3: \_\_\_\_\_  
\_\_\_\_\_ (2)

Example for Maintenance Type 3: \_\_\_\_\_  
\_\_\_\_\_ (1)

Maintenance Type 4: \_\_\_\_\_  
\_\_\_\_\_ (2)

Example for Maintenance Type 4: \_\_\_\_\_  
\_\_\_\_\_ (1)

**Question 11****A3 (6 marks)**

When upgrading hardware in a computer system it is very important that the process is documented appropriately.

List **THREE** elements that the documentation should contain.

Element 1:

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(2)

Element 2:

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(2)

Element 3:

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(2)

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