



L-Università
ta' Malta

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE
EXAMINATIONS BOARD

**SECONDARY EDUCATION CERTIFICATE LEVEL
2021 SUPPLEMENTARY SESSION**

SUBJECT:	Engineering Technology
PAPER NUMBER:	Synoptic – Unit 1
DATE:	3 rd November 2021
TIME:	4:00 p.m. to 6:05 p.m.

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

Answer **ALL** questions in the space provided.

Scenario

A technician who is working in an engineering company is required to answer the following questions regarding health and safety protocols to show understanding on materials and the use of tools.

Question 1

K-2 (6 marks)

a. Match the safety sign colours with their purpose by drawing a line between Column A and Column B.

Column A (Colours)

Red
Blue
Green
Yellow



Column B (Safety sign)







No danger
Danger
Warning
Mandatory

(2)

b. Write down the name of the safety signs given in Table 1.

Table 1 – Safety signs.

	Safety Sign	Name
i.	 Source: https://legislation.mt/	_____ (0.25)
ii.	 Source: https://legislation.mt/	_____ (0.25)

<p>iii.</p>	 <p>Source: https://legislation.mt/</p>	<p>_____</p> <p>(0.25)</p>
<p>iv.</p>	 <p>Source: https://legislation.mt/</p>	<p>_____</p> <p>(0.25)</p>
<p>v.</p>	 <p>Source: https://legislation.mt/</p>	<p>_____</p> <p>(0.25)</p>
<p>vi.</p>	 <p>Source: https://legislation.mt/</p>	<p>_____</p> <p>(0.25)</p>
<p>vii.</p>	 <p>Source: https://legislation.mt/</p>	<p>_____</p> <p>(0.25)</p>
<p>viii.</p>	 <p>Source: https://legislation.mt/</p>	<p>_____</p> <p>(0.25)</p>

This question continues on next page.

Figure 1 sets the scene of a car mechanic workshop and its environment.

c. Figure 1 sets the scene of a car mechanic workshop and its environment. In this given scenario, identify **FOUR** safety signs which should be found here.



Figure 1 – Car Mechanic Workshop
 Source: shutterstock.com

(2)


Question 2

K-4 (8 marks)

a. Identify the different forms of supply of metal given in Table 2.

Table 2 – Metal forms of supply.

	Metal Form of Supply	Name
i.	 <p style="text-align: center;"><i>Source: https://www.google.com/</i></p>	<p>_____</p> <p style="text-align: right;">(0.5)</p>

<p>ii.</p>	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.5)</p>
<p>iii.</p>	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.5)</p>
<p>iv.</p>	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.5)</p>

b. Outline **TWO** different properties for **each** of the following metals:

Aluminium

_____ (1)

Cast iron

_____ (1)

This question continues on next page.

b. Outline **TWO** different properties for each of the following woods:

Oak

(1)

Pine

(1)

c. Describe the form of supply and type of wood you would choose when manufacturing outdoor shelves as shown in Figure 3. In your descriptions include **ONE** reason for using such wood and **ONE** reason for the form of supply.



Figure 3 – Outdoor bookcase
Source: <https://rylandpeters.com/blogs/home-garden>



(4)

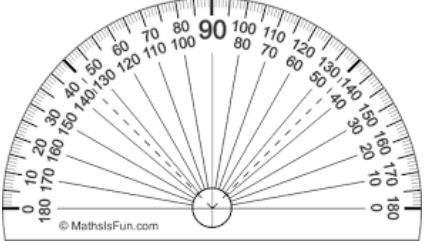


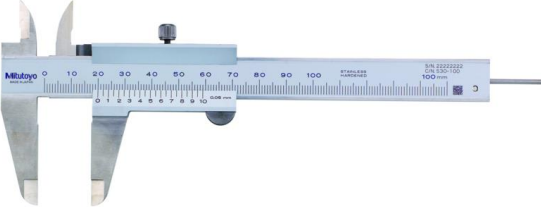


Question 4

K-7 (8 marks)

a. Identify the measuring and marking out tools given in Table 3 below.

Table 3 – Measuring and marking out tools.

	Measuring and marking out tools	Name
i.	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.25)</p>
ii.	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.25)</p>

<p>iii.</p>	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.25)</p>
<p>iv.</p>	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.25)</p>
<p>v.</p>	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.25)</p>
<p>vi.</p>	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.25)</p>
<p>vii.</p>	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.25)</p>
<p>viii.</p>	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.25)</p>

b. Outline **ONE** function of each of the following measuring and marking out tools:

i. Micrometer

(1)

ii. Divider

(1)

c. You are required to manufacture the outdoor shelves given in Figure 4. Choose **TWO** measuring tools and **TWO** marking out tools for this task.

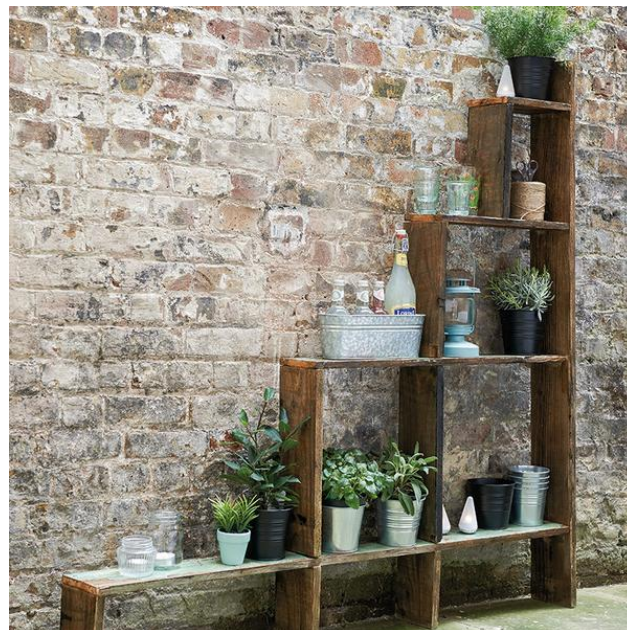


Figure 4 – Outdoor bookcase
Source: <https://rylandpeters.com/blogs/home-garden>

(4)

Question 5

K-8 (8 marks)

a. Name the different cutting and drilling tools given in Table 4.

Table 4 – Cutting and drilling tools.

	Cutting and drilling tools	Name
i.	 <p>Source: shorturl.at/anEOT</p>	<p>_____</p> <p>(0.5)</p>
ii.	 <p>Source: shorturl.at/hlFJQ</p>	<p>_____</p> <p>(0.5)</p>
iii.	 <p>Source: shorturl.at/klyXY</p>	<p>_____</p> <p>(0.5)</p>
iv.	 <p>Source: shorturl.at/ksBG2</p>	<p>_____</p> <p>(0.5)</p>

This question continues on next page.

b. Relate **TWO** appropriate cutting and drilling tools to make the robotic arm shown in Figure 5 below.



Figure 5 – Robotic Arm Clamp

Source: <https://www.elecrow.com/robotic-all-metal-claw-for-robot-arm-diy.html>

Tool 1: _____
_____ (1)

Tool 2: _____
_____ (1)

c. Describe **TWO** preventive measures to be taken when using cutting and drilling tools.

_____ (4)

Question 6

K-9 (8 marks)

a. Identify the different bending and forming tools given in Table 5.

Table 5 – Bending and forming tools.

	Bending and forming tools	Name
i.	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.5)</p>
ii.	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.5)</p>
iii.	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.5)</p>
iv.	 <p>Source: https://www.google.com/</p>	<p>_____</p> <p>(0.5)</p>

b. You are required to manufacture the metal shovel given in Figure 6. Associate **TWO** appropriate bending and forming tools which are appropriate to perform this task.



Figure 6 – Metal Shovel

Source: <https://www.diy.com/departments/slemcka-metal-fireplace-shovel>

Tool 1: _____ (1)

Tool 2: _____ (1)

c. Describe **TWO** preventive measures to be taken when using the bending and forming tools mentioned in Question 6b.

_____ (4)

Question 7

C-1 (12 marks)

a. Explain **TWO** consequences of using safety glasses instead of a welding helmet when doing a welding task.

Consequence 1: _____

_____ (2)

Consequence 2: _____

_____ (2)

b. Explain the purpose of the different functional design and materials of welding gloves.

Functional design: _____

_____ (2)

Material: _____

_____ (2)

c. Choose the appropriate PPE for a construction worker whose work may include loading and unloading of heavy material, digging trenches, and preparing the construction site. Explain your choice of PPE in terms of design and material for the given construction work.



Check 1: _____

_____ (2)

Check 2: _____

_____ (2)

c. The specifications presented before the construction of the product shown in Figure 7 are as follows:

- The stool should be sturdy with no loose parts;
- The stool must have smooth edges and surfaces.

Evaluate the finished product by assessing the product in Figure 7 according to the given specifications. In the space provided write how you would check this stool against the given specifications.

_____ (4)

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