



L-Università  
ta' Malta

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE  
EXAMINATIONS BOARD

**SECONDARY EDUCATION CERTIFICATE LEVEL  
2022 SUPPLEMENTARY SESSION**

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SUBJECT: **Engineering Technology**  
PAPER NUMBER: Synoptic – Unit 1  
DATE: 1<sup>st</sup> November 2022  
TIME: 8:30 a.m. to 10:35 a.m.

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

**For examiners' use only:**

Question	1	2	3	4	5	6	7	8	Total
Score									
Maximum	6	8	8	8	8	8	12	12	70



- b. List **TWO** personal protective equipment (PPE) that should be worn when using a welding set as shown in Figure 1.



Figure 1: Welding  
(Source: shutterstock.com)

PPE 1: \_\_\_\_\_ (1)

PPE 2: \_\_\_\_\_ (1)

- c. A construction worker uses a harness and a hard hat when working at heights as shown in Figure 2. Describe the function of the harness and hard hat in this scenario.



Figure 2: Construction site  
(Source: shutterstock.com)

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

**Please turn the page.**

**Question 2**

**K-2 (8 marks)**

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

Column A (Colours)

Green
Blue
Red
Yellow






Column B (Safety sign)




Warning
No danger
Danger
Mandatory

(2)

b. Write down the name of the safety signs given in Table 2.

Table 2: Safety signs.

	<b>Safety Sign</b>	<b>Name</b>
i.		<p>_____</p> <p style="text-align: right;">(0.25)</p>
ii.		<p>_____</p> <p style="text-align: right;">(0.25)</p>
iii.		<p>_____</p> <p style="text-align: right;">(0.25)</p>
iv.		<p>_____</p> <p style="text-align: right;">(0.25)</p>
v.		<p>_____</p> <p style="text-align: right;">(0.25)</p>

vi.		<p>_____</p> <p style="text-align: right;">(0.25)</p>
vii.		<p>_____</p> <p style="text-align: right;">(0.25)</p>
viii.		<p>_____</p> <p style="text-align: right;">(0.25)</p>

(Source: <https://legislation.mt/>)

- Part of the work should be carried out in the wood-working work shop.
  - The area has a significant amount of wood working-machines and power tools to process wood.
- c. Identify **FOUR** safety signs which could be found in the wood-working work shop as indicated in the scenario.

Safety sign 1: \_\_\_\_\_ (1)

Safety sign 2: \_\_\_\_\_ (1)

Safety sign 3: \_\_\_\_\_ (1)

Safety sign 4: \_\_\_\_\_ (1)

8

**Question 3**

**K-5 (8 marks)**

- a. List **FOUR** different forms of supply of wood.

Form of supply 1: \_\_\_\_\_ (0.5)

Form of supply 2: \_\_\_\_\_ (0.5)

Form of supply 3: \_\_\_\_\_ (0.5)

Form of supply 4: \_\_\_\_\_ (0.5)

***This question continues on next page.***

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

Walnut

Property 1: \_\_\_\_\_  
\_\_\_\_\_ (0.5)

Property 2: \_\_\_\_\_  
\_\_\_\_\_ (0.5)

Red Deal

Property 1: \_\_\_\_\_  
\_\_\_\_\_ (0.5)

Property 2: \_\_\_\_\_  
\_\_\_\_\_ (0.5)

c. Describe the form of supply and type of wood you would choose when manufacturing a wooden cup holder for sofas as shown in Figure 4.  
In your descriptions include **ONE** reason for using such wood and **ONE** reason for the form of supply.



Figure 4: Wooden cup holder for sofa  
(Source: <https://abeautifulmess.com/diy-wooden-sofa-sleeve-with-cup-holder/>)

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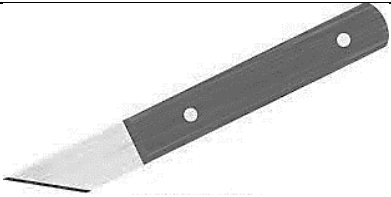
(4)

**Question 4**

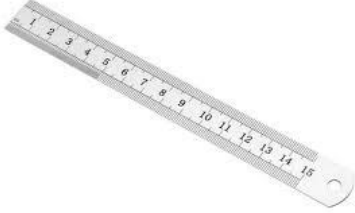



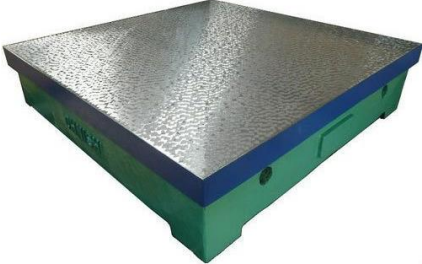
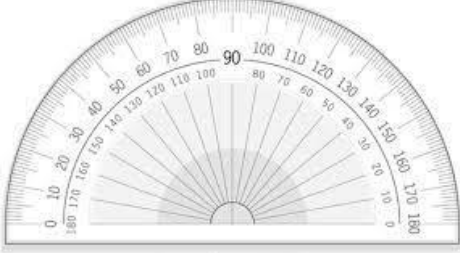
**K-7 (8 marks)**

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

Table 3: Measuring and marking out tools.

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

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



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

Vernier Calliper

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(1)

Centre Punch

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(1)

c. Choose the appropriate measuring and marking out tools for each of the given tasks:

i. Measure the height of a wardrobe:

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(1)

ii. Check whether two pieces of wood are at 90° to each other:

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(1)

iii. Mark a visible line on a piece of wood before cutting it with a hand saw:

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(1)

iv. To measure and mark out the points where dowels will be placed on a piece of wood:

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(1)

8





***Please turn the page.***

**Question 5**

**K-8 (8 marks)**

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

Table 4: Cutting and drilling tools.

	<b>Cutting and drilling tools</b>	<b>Name</b>
i.		<hr/> <p style="text-align: right;">(0.5)</p>
ii.		<hr/> <p style="text-align: right;">(0.5)</p>
iii.		<hr/> <p style="text-align: right;">(0.5)</p>
iv.		<hr/> <p style="text-align: right;">(0.5)</p>

*(Source: shutterstock.com)*

b. Relate the appropriate cutting or drilling tool for each task:

i. Drill a hole with a 3mm diameter hole in a piece of wood

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

ii. Cut a circle and other irregular shapes on a piece of wood

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

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

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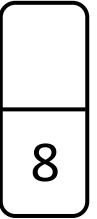
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(4)







***Please turn the page.***

**Question 6**

**K-4 (8 marks)**

a. Identify the different forms of supply of metal given in Table 5.

Table 5 – Metal forms of supply.

	<b>Metal Form of Supply</b>	<b>Name</b>
i.		<p>_____</p> <p>(0.5)</p>
ii.		<p>_____</p> <p>(0.5)</p>
iii.		<p>_____</p> <p>(0.5)</p>
iv.		<p>_____</p> <p>(0.5)</p>

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

Stainless Steel

Property 1:

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(0.5)

Property 2:

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(0.5)

Copper

Property 1:

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(0.5)

Property 2:

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(0.5)

c. Describe the form of supply and type of metal you would choose when manufacturing a metal dust pan as shown in Figure 5. In your descriptions include **ONE** reason for using such metal and **ONE** reason for the form of supply.



Figure 5: Metal dust pan  
(Source: <https://malta.desertcart.com/>)

***This question continues on next page.***



Check 2: Final finishing: \_\_\_\_\_

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

c. The specifications presented before the construction of the product shown in Figure 5 are as follows:

- The dust pan must have smooth edges and surfaces
- The dust pan must be functional

Evaluate the finished product in Figure 5 according to the given specifications. In the space provided, describe how you would check the dust pan against the given specifications.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (4)

12

**Question 8**

**C-4 (12 marks)**

a. Describe the following methods used in joining materials together.

i. Self-tapping screws

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

ii. Wood adhesives

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

b. Select the ideal joining method for the following scenarios. The same method can be used more than once.

i. Permanently fix a small crack in a plastic storage box.

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



ii. Join **TWO** slotted metal channels to be used for shelving.

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

c. Justify the joining method used for each of the following scenarios:

Scenario 1: The metal of an aircraft fuselage (body) is connected by rivets instead of bolts and nuts. Justify why rivets are preferred in such scenario.

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

Scenario 2: Outer edges of a wooden cabinet are normally joined using dowels instead of screws. Justify the use of dowels in this scenario.

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