



SUBJECT:	Engineering Technology
UNIT:	1
ASSIGNMENT:	3 – Controlled
TITLE:	Working in a manufacturing company
DATE SET:	25 th April 2022
DEADLINE:	23 rd May 2022

General Instructions

- Lines provided for sub-questions (a) and (b) indicate the length expected in candidate's answers.
- Students are to autonomously answer sub-questions (c). Therefore, lines provided do **not** necessarily indicate the length and depth of the expected answer.
- Application criteria will be assessed in class.
- The time required to complete practical tasks will be communicated by the teacher.
- Answers may be either in English or in Maltese.

Candidate's Declaration of Authenticity

I, the undersigned, _____ (*Name and Surname*), declare that all the work I shall submit for this assignment will be my own.

I further certify that if I use the ideas, words, or passages from existing sources, I will quote those words or paraphrase them and reference them by making use of a reference system.

I am aware that should I submit work which is not mine, or work which has been copied from one or more sources, I will be penalised as per MATSEC Examinations Board policies related to plagiarism.

Candidate's Signature: _____

I.D. Card No.: _____

Date: _____

General Scenario

- A manufacturing company would like to employ several technicians.
- You applied for this job.
- The following test was given to assess your knowledge on permanent and non-permanent joining processes and finishing a product.
- Complete the following test by answering **ALL** the questions in the space provided.

SECTION A – WRITE-ON





Question 1

K-7 (4 marks)

Permanent joints usually cannot be disassembled without destroying the parts or damaging their surfaces.

a. Table 1 shows different tools and equipment used for making permanent joints. Identify the given tools and equipment.

Table 1 – Tools and equipment used for making permanent joints

	Tools and equipment	Name
i.		_____
ii.		_____
iii.		_____
iv.		_____

(Source: <https://www.amazon.co.uk/>)

b. Outline the function of the tools and equipment identified in question 1a for making permanent joints.

Tool/equipment 1: _____

Function: _____

Tool/equipment 2: _____

Function: _____

Tool/equipment 3: _____

Function: _____

Tool/equipment 4: _____

Function: _____

c. Describe a preventive measure for each of the **FOUR** tools and equipment identified in question 1a. Each preventive measure can be used once.

Tool/equipment 1: _____

Preventive measure: _____

Tool/equipment 2: _____

Preventive measure: _____

Tool/equipment 3: _____

Preventive measure: _____

Tool/equipment 4: _____

Preventive measure: _____

Question 2

C-3 (6 marks)

Different materials can be joined in different ways. The choice of joining method depends on the requirements of the given application.

Welding	nuts and bolts	PVA glue	Plastic welding
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a. Identify the ideal joining method to permanently join two pieces of metal firmly together.

b. Describe the method of using ultrasonic welding (plastic welding) to join two moulded plastic parts.

Question 3

K-8 (4 marks)

A product should be finished off according to set requirements.

Several finishing tools and equipment can be used for this task and the appropriate preventive measures should be observed.

a. Identify the finishing tools given in Table 2.

Table 2 – Finishing tools

	Finishing Tools	Name
i.		_____
ii.		_____
iii.		_____
iv.		_____
v.		_____

(Source: <https://www.amazon.co.uk/>)

b. Match the finishing tool given on the left with the task on the right.

Spray gun

It levels out residue or remove excess of an applied product.

Sander

A device which sprays a coating (paint, ink, varnish, etc.) through the air onto a surface.

File

A power tool used to smooth surfaces by abrasion with sandpaper e.g. remove paint.

Buffer

It is good at removing rust, corrosion, paint and polishing metals.

Emery cloth

It is used to remove fine amounts of material from a workpiece starting from a rasp and finishing off with a fine one.

SECTION B - PRACTICAL

Background Information

- You are requested to make use of a permanent joining process to manufacture the following wood joint.
- You are required to:
 - Mark out the two given wood blocks.
 - Cut the extra material as in Figure 2.
 - Join the two pieces by gluing and making use of dowel. Trim off excess of dowels to finish exercise.

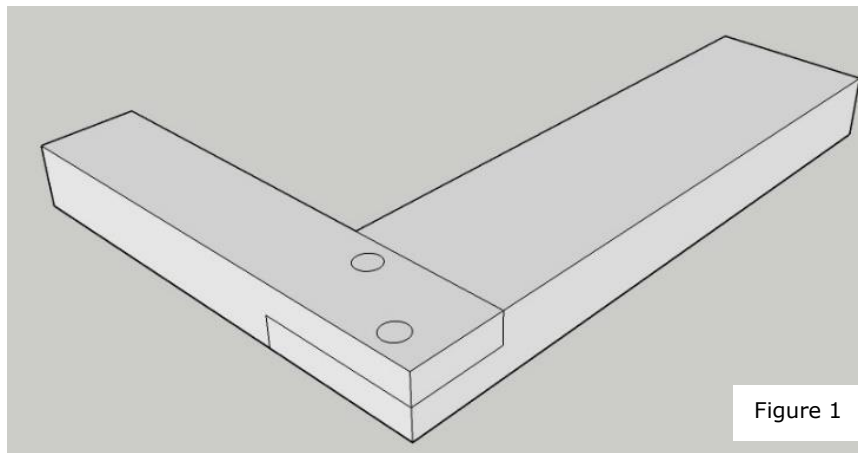


Figure 1

- The teacher will provide you with the necessary tools, equipment and material required to conduct this exercise.
- During this practical task, you should observe all Health and Safety Procedures and use your own adequate PPE.
- The following drawings are meant to guide you in this process.

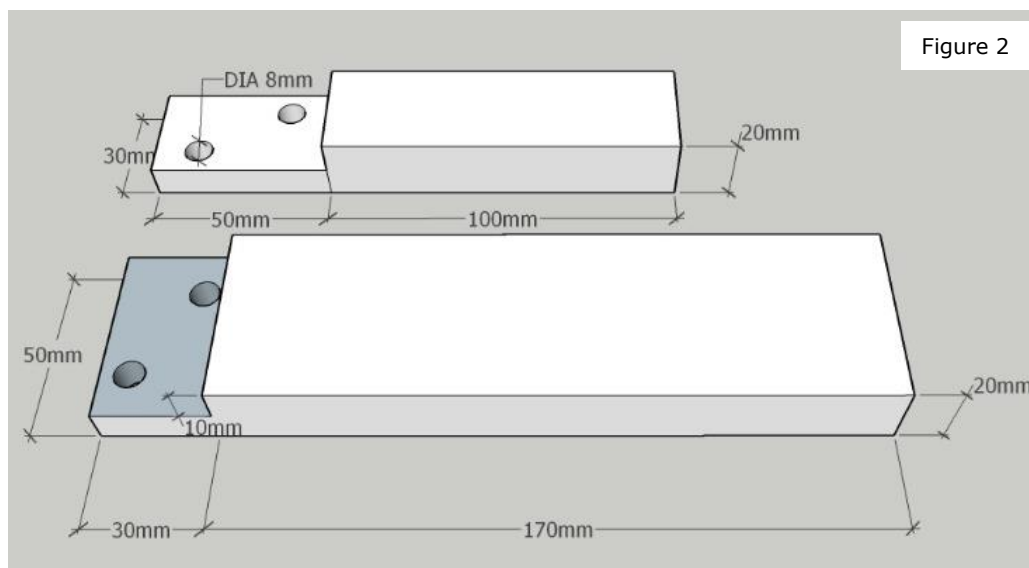
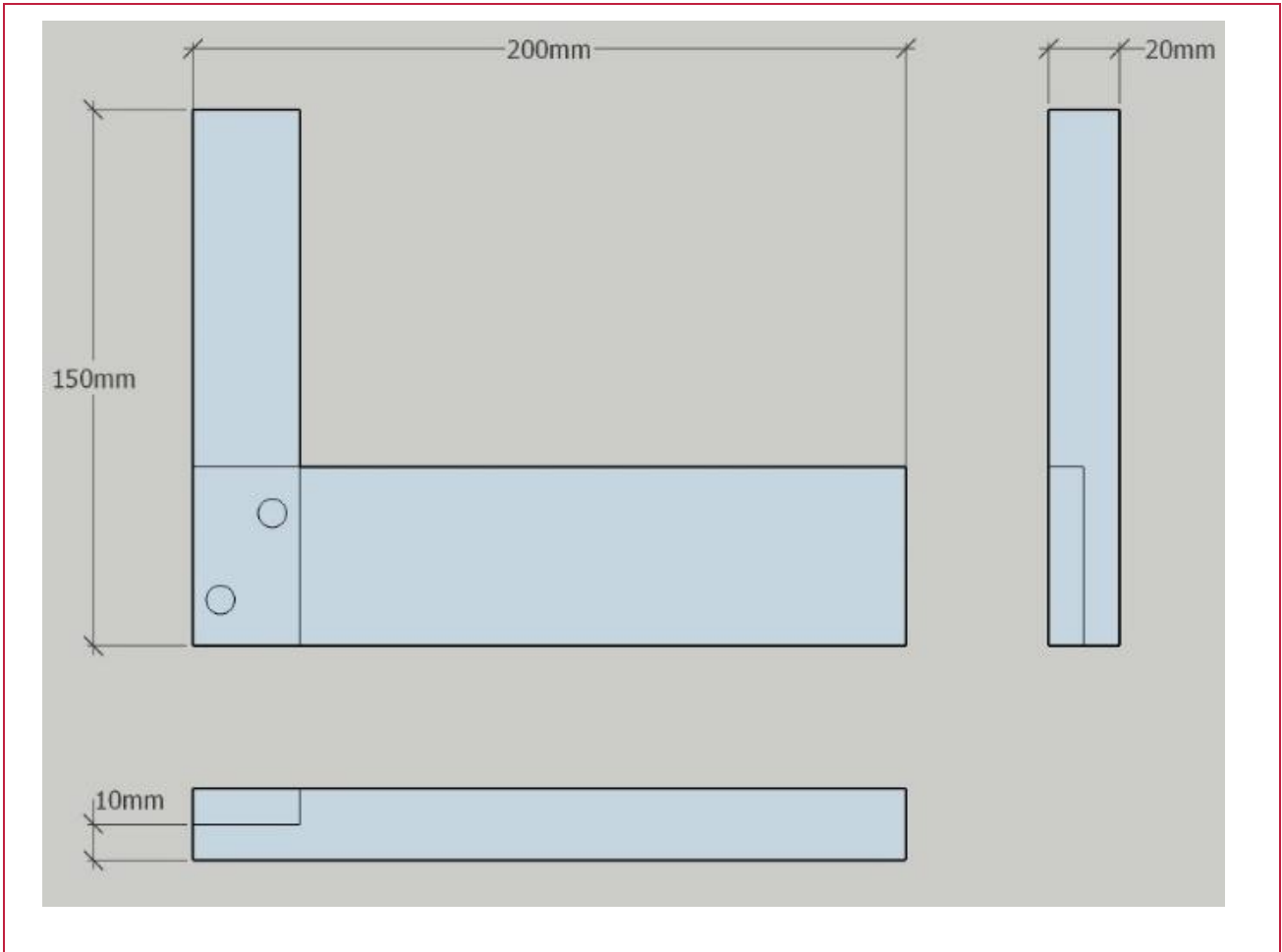


Figure 2

SECTION B - PRACTICAL



Question 1

A-4 (10 marks)

- Choose the appropriate tools and equipment for the task. (It is highly recommended that you prepare a list of the tools and equipment before the task.)
- Complete the Risk Assessment Sheet provided in Table 3.
 - Fill in **ONE** 'Risk' and **ONE** 'Person in danger' while doing a permanent joint;
 - Fill in **TWO** 'Existing control measures' when carrying out a permanent joining process;
 - Using the Likert scale below fill in the 'Risk Rating' and give **ONE** clear explanation of a 'control measure required' when carrying out a permanent joining process.
- Use permanent joining tools and equipment to build the given project. Ensure precise and accurate work to a tolerance of +/- 5mm and +/- 3°.

During this practical task, you should observe all Health and Safety Procedures.

Name: _____

Class: _____

Table 3 – Risk Assessment Sheet

RISK ASSESSMENT SHEET						
Assessment by:		Assessment for:			Date:	
Activity	Hazard	Risk	Persons in Danger	Existing Control Measures in Place	* Risk rating	Control Measures required
Permanent Joining Process	Glue /Adhesives	Skin irritation and Inhalation of chemical/fumes	_____	_____ _____ _____	2	While gluing hand / eye protection is to be used so as to eliminate contact with skin
	Hammering	_____	User	_____ _____ _____	_____	_____ _____ _____ _____

Least severe Most severe

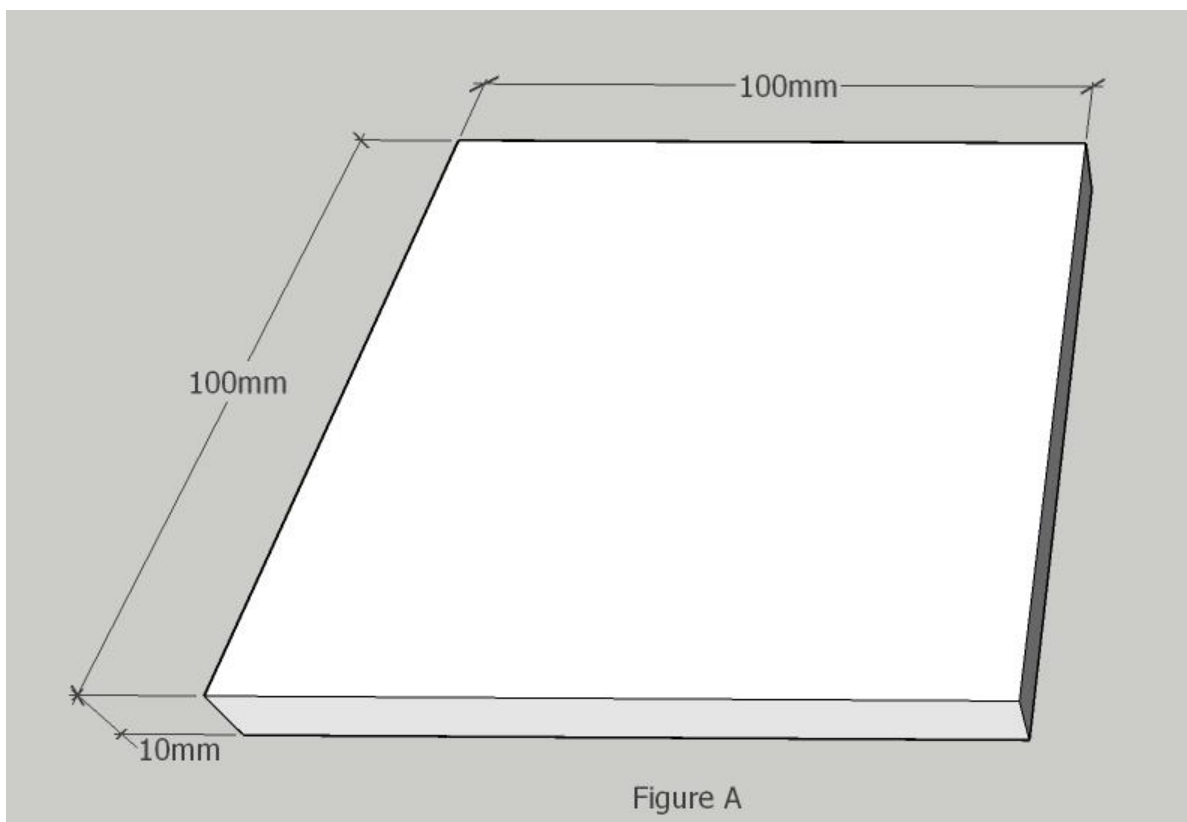
*Risk Rating

1	2	3	4	5
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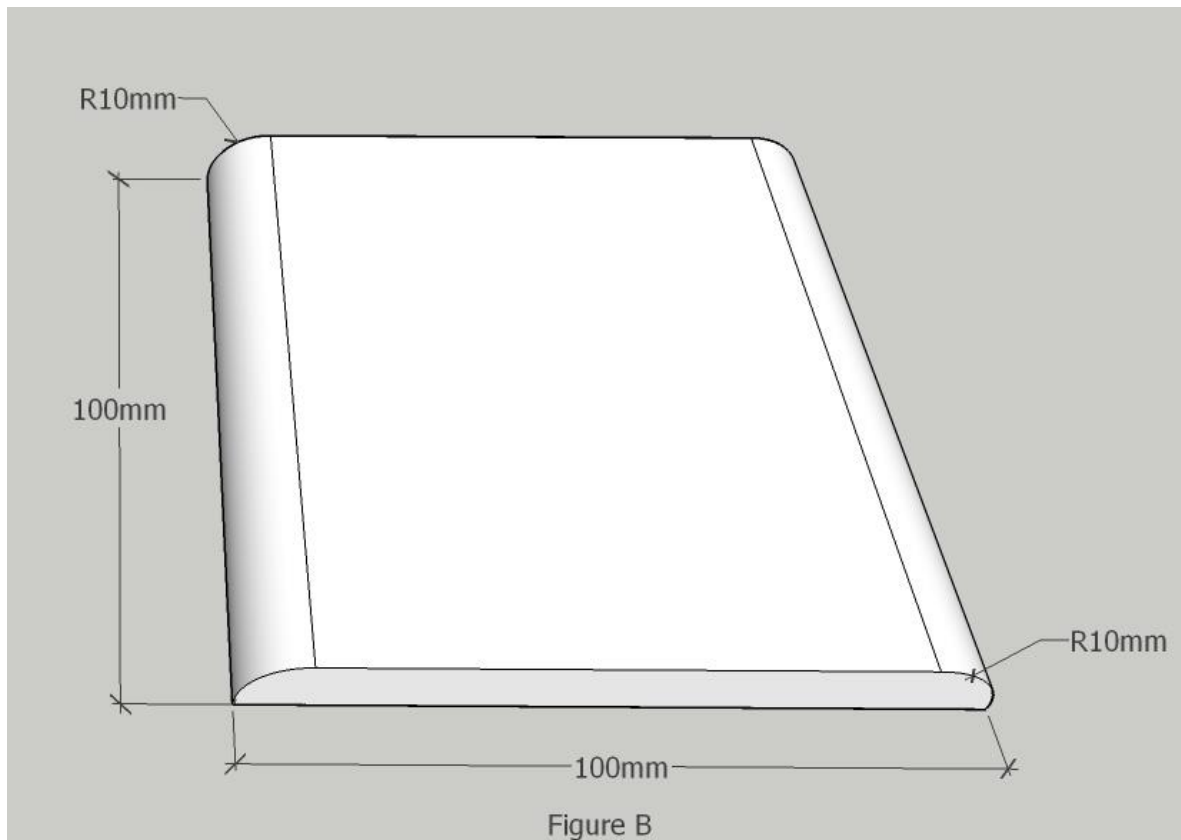
SECTION C - PRACTICAL

Background Information

- You are required to finish off the given wood block in figure A to resemble wood block in figure B.
- You are required to:
 - round 2 edges as indicated and according to given dimensions
 - refine by sanding all surfaces
 - paint all sides but the base
- The teacher will provide you with the necessary tools, equipment and material required to conduct this exercise however.
- During this practical task, you should observe all Health and Safety Procedures and use your own adequate PPE.
- The following drawings are meant to guide you in this process.



SECTION C - PRACTICAL



Question 1

A-5 (10 marks)

- Choose appropriate tools and equipment in preparation for the task. (It is highly recommended that you prepare a list of the tools and equipment before the task.)
- Complete the Risk Assessment Sheet provided in Table 4.
 - Fill in **ONE** 'Hazard' and **ONE** 'Risk' while before the given finishing process;
 - Fill in **TWO** 'Existing control measures' before the given finishing process;
 - Using the Likert scale below fill in the 'Risk Rating' and indicate **ONE** 'control measure required' before the given finishing process.
- Use appropriate finishing tools and/or equipment to finish off the given project. Ensure that you perform the correct processes.

During this practical task, you should observe all Health and Safety Procedures.

Name: _____

Class: _____

Table 4 – Risk Assessment Sheet

RISK ASSESSMENT SHEET						
Assessment by:		Assessment for:			Date:	
Activity	Hazard	Risk	Persons in Danger	Existing Control Measures in Place	* Risk rating	Control Measures required
Finishing Process	_____	<ul style="list-style-type: none"> Respiratory disorder such as asthma and other respiratory conditions Eye irritation 	User/colleagues working in nearby areas	<ul style="list-style-type: none"> Good ventilation Suitable cleaning tools _____ 	1-3	<ul style="list-style-type: none"> do not dry sweep wood dust but use vacuum cleaner Pin safety signs near machinery and workbenches _____
	Slips, Trips and Falls e.g paint spill or other fine wood dust	_____	User/colleagues working in nearby areas	<ul style="list-style-type: none"> Clear away off-cuts Clear dust regularly Good lighting in all areas _____ 	_____	<ul style="list-style-type: none"> Clear all off-cuts wipe off any spillages of paint immediately

Least severe Most severe

*Risk Rating

1	2	3	4	5
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