Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination, 2011

Materials Technology (Wood)
Higher Level
Section A (40 marks)

Monday, 20 June
Afternoon, 2:00 - 4:00

Instructions

(a) *Answer* any ***sixteen*** *questions.*

(b) *All questions carry equal marks.*

(c) *Answer the questions in the spaces provided.*

(d) *This booklet* ***must*** *be handed up at the end of the examination.*

(e) *Write your examination number in the box provided and on all other pages used.*

Examination Number:

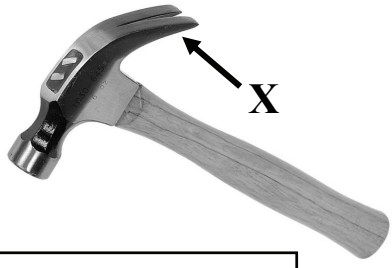
Centre Number

Section A	
1	
2	
3	
4	
5(a) or 5(b)	
Total	

SECTION A - 40 MARKS

Answer any 16 questions from this section. All questions carry equal marks.

1. (i) Name the woodworking tool shown in the diagram.

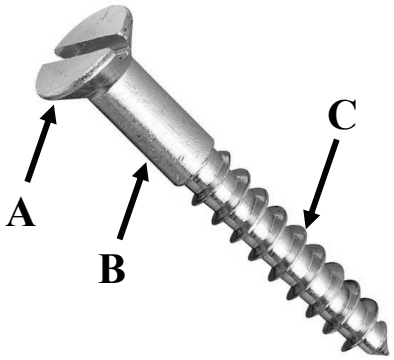


NAME _____

(ii) State the function of the part labelled **X**.

FUNCTION _____

2. The diagram shows a wood screw.
In the spaces provided, name the parts labelled **A** ,**B** and **C**.



A _____

B _____

C _____

3. (i) Plastics are divided into two main categories.
Name these categories.

CATEGORY 1 _____

CATEGORY 2 _____

(ii) Plastic objects from one of the categories can be recycled by melting and re-shaping. Name this category.

CATEGORY _____

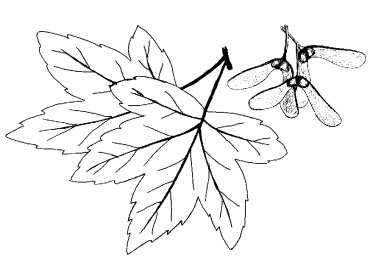
4. The diagrams show **THREE** types of hinge. Name these hinges.

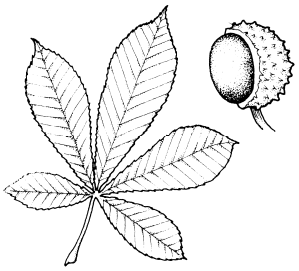
_____

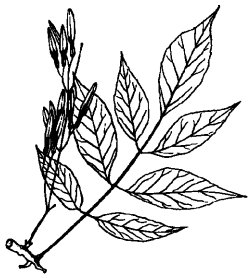
_____

_____

5. The diagram shows the leaves of three common Irish trees.
In the spaces provided, name the trees.







6. (i) Name the tool shown in the diagram.

NAME

(ii) State an appropriate use for this tool.

USE

7. (i) Name the timber defect shown in the diagram.

NAME

(ii) What is the most likely cause of this defect?

CAUSE

8. (i) Metals are divided into two main categories, **ferrous** and **non-ferrous**.
What is the main difference between the categories?

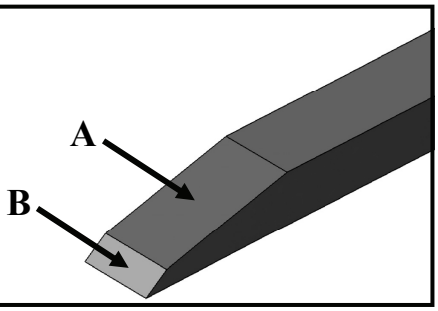
DIFFERENCE

(ii) For each of the following metals, state whether it is **ferrous** or **non-ferrous**.

Mild Steel

Lead

9. The diagram shows the tip of a chisel.
What is the correct name for the **TWO** angles?



ANGLE A ☐

ANGLE B ☐

10. The diagram shows pieces of wood being held by a G-cramp while gluing.
What is the name for the force applied by the G-cramp to the pieces of wood?

COMPRESSION ☐

TENSION ☐

TORSION ☐

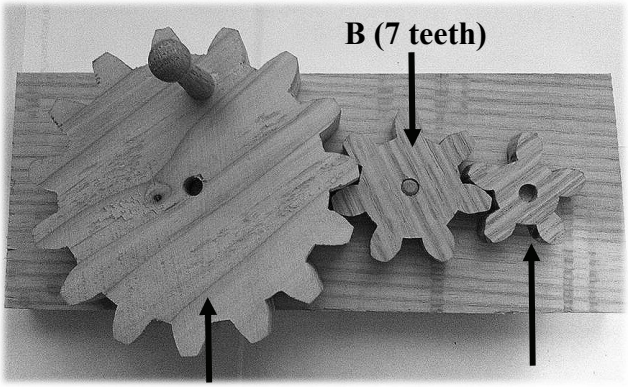
11. The diagram shows a wooden gear mechanism.

(i) If gear wheel **A** is rotated clockwise, indicate, by ticking the box, the direction in which gear wheel **C** will rotate.

CLOCKWISE ☐ **ANTI-CLOCKWISE** ☐

(ii) If gear wheel **A** is rotated at 42 revolutions per minute (R.P.M.), what is the rotational speed of gear wheel **C**?

SPEED ☐ **R.P.M.**

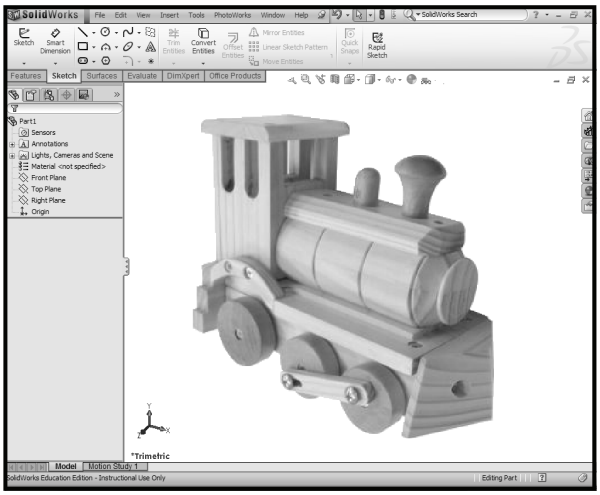


12. Describe **TWO** activities, in an MTW workshop, that require eye protection.

ONE

TWO

13. **CAD** is often used by students to design MTW projects.



(i) What does **CAD** stand for?

C

A

D

(ii) Give **ONE** advantage of using **CAD** for this purpose.

ADVANTAGE

14. Glues are often used in MTW projects.
Name **TWO** of these glues and identify an appropriate use for each.

GLUE 1

USE

GLUE 2

USE

15. (i) Name the woodworking machine shown.

NAME

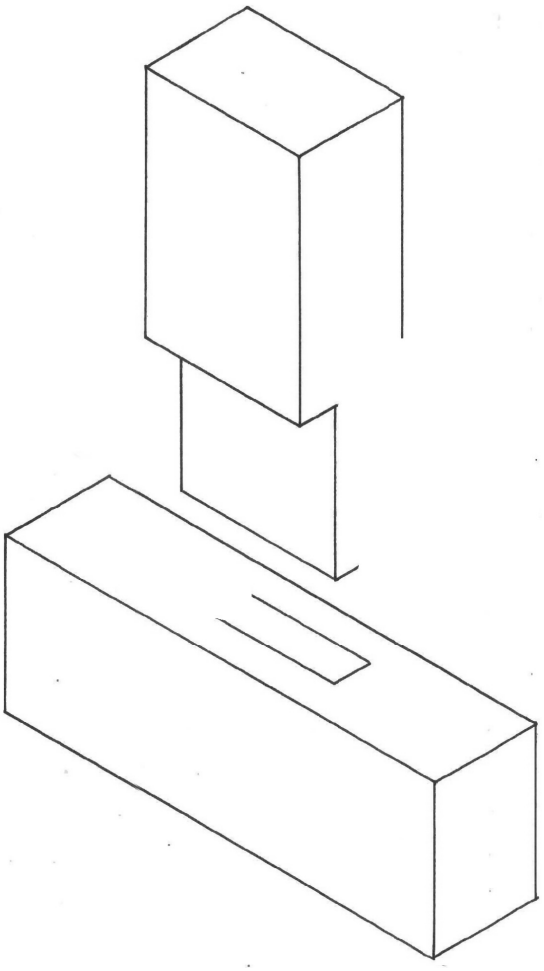
(ii) State **ONE** specific safety precaution that should be observed when using this machine, and give **ONE** reason for your answer.

PRECAUTION

REASON

16. The diagram shows an incomplete exploded isometric sketch of a **Mortice and Tenon Joint**.

Complete the sketch of the joint.

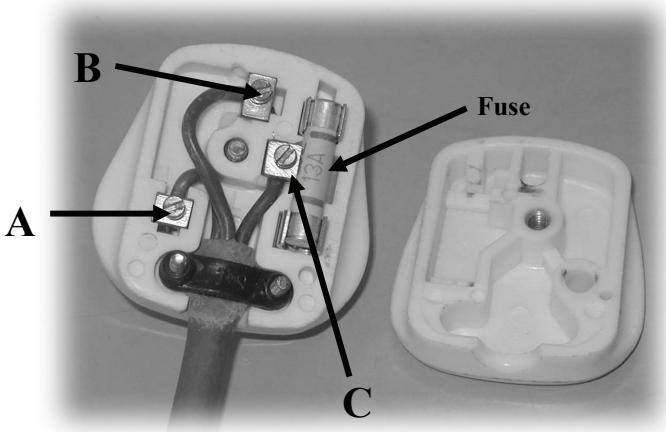


17. (i) Identify the terminals of the three pin plug labelled **A**, **B** and **C**.

A _____

B _____

C _____



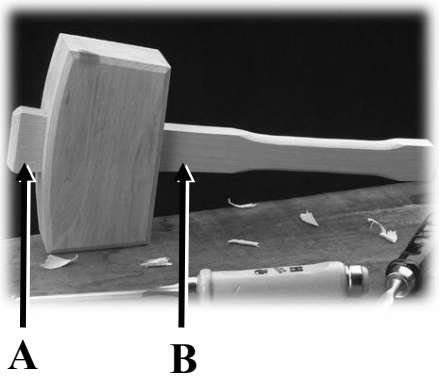
(ii) What is the function of the **FUSE** in a plug?

FUNCTION _____

18. EMC is a term associated with seasoning or drying of timber.
What do the letters **EMC** stand for?

E _____ **M** _____ **C** _____

19. The diagram shows a wooden mallet.



(i) What wood is a mallet usually made from?

ANSWER _____

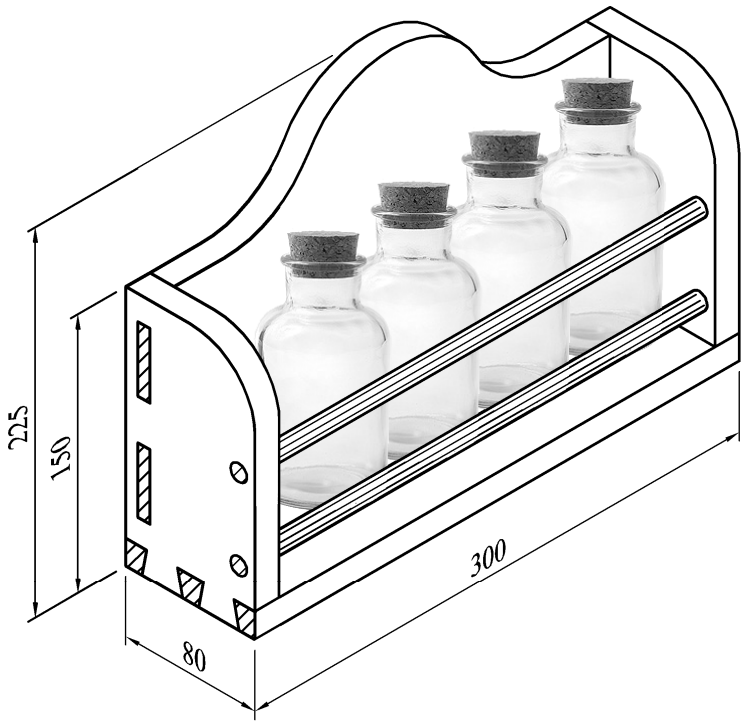
(ii) Why is the handle of the mallet wider at **A** than **B**?

REASON _____

20. The diagram shows a Spice Rack made from wood.

Complete the cutting list below.

Note: All material is 15mm thick.



Description	Quantity	Length	Width	Thickness
Base	1	300		15
Ends	2		80	
Back	1	300		15
Dowel		300	Ø9	

This booklet must be handed up at the end of the examination.

Blank Page

Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination, 2011

Materials Technology (Wood)
Higher Level
Section B (60 marks)

Monday, 20 June
Afternoon, 2:00 - 4:00

Instructions

(a) *Answer **three** questions. All questions carry equal marks.*

(b) *You may answer either question 5A **or** question 5B but **not both** of them.*

(c) *Where sketches are required they may be done freehand or on the graph paper provided.*

(d) *Write your examination number on the answer book and on all other pages used.*

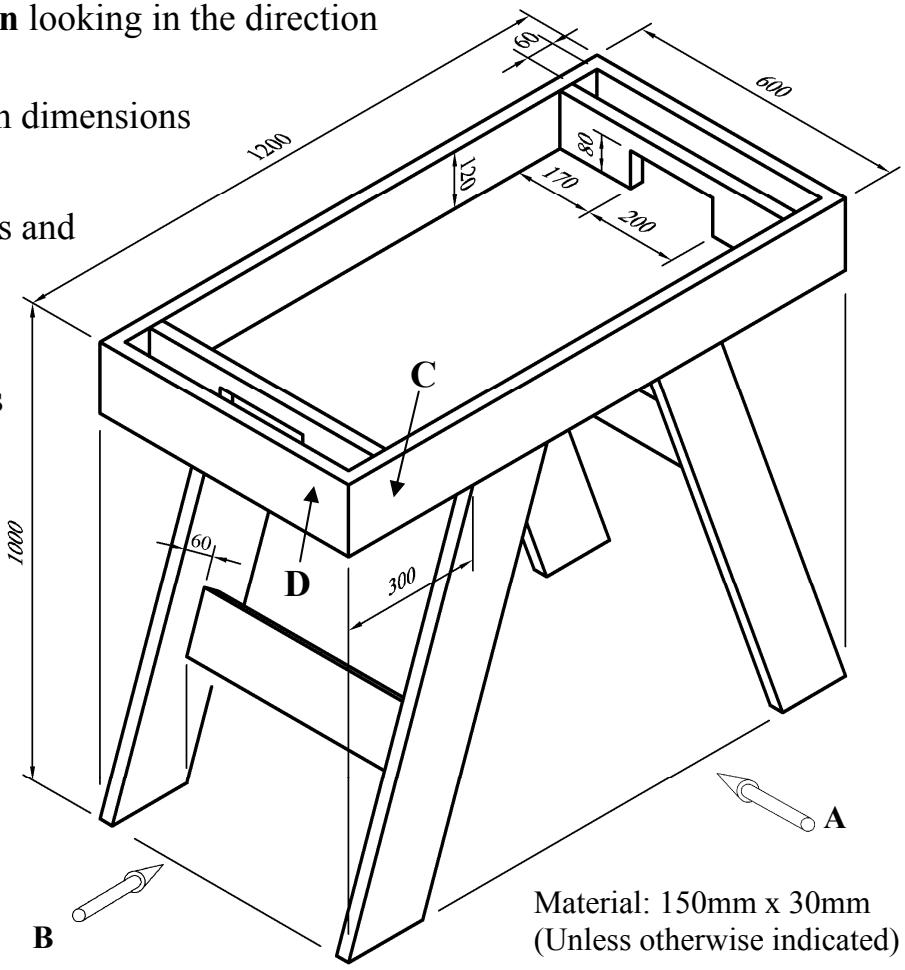
(e) ***Question 1** from this section must be answered on drawing paper. All other questions should be answered on the answer book supplied.*

1. The 3D graphic below shows a wooden soccer table which is also shown as a dimensioned isometric drawing.

(i) To a scale of 1:5, draw a **front elevation** of the soccer table looking in the direction of arrow **A** and an **end elevation** looking in the direction of arrow **B**.

Include **FOUR** main dimensions on your drawing.

(ii) With the aid of notes and ***neat freehand sketches***, describe a suitable method of jointing members **C** and **D** at the corner.



Material: 150mm x 30mm
(Unless otherwise indicated)

2. (i) Two stages in a typical design process are **Investigation/Research** and **Design Ideas/Solutions**. Explain these **TWO** stages.

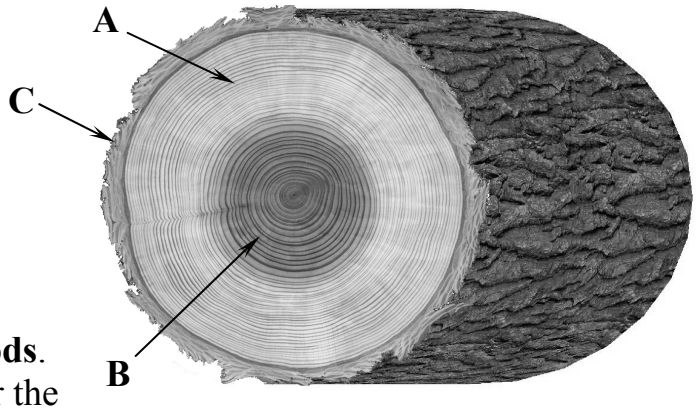
(ii) The diagram shows a collection of First-Aid items similar to those found in most homes.

Using notes and ***neat freehand sketches*** to communicate your ideas, design a suitable wall-mounted unit that would store these items.

(iii) State **TWO** specific design requirements that must be considered for the proposed unit.

(iv) Describe, using notes and ***neat freehand sketches***, how you incorporated these requirements into your final design solution.

3. The diagram shows a cross section through a tree trunk.



(i) Name the parts of the cross section labelled **A**, **B** and **C** and give a brief description of each.

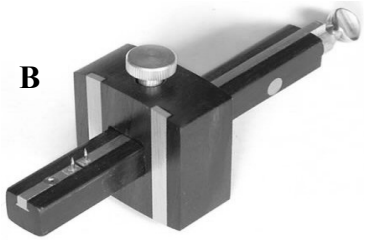
(ii) Trees are divided into two main groups, **hardwoods** and **softwoods**. Compare these two groups under the following headings: **Leaves, seeds, timber** & **preferred climate**.

(iii) Food is manufactured in the leaves of a tree using a number of raw materials. What is the correct name for this **chemical reaction**? Name **TWO** of the raw materials necessary for this chemical reaction to take place.

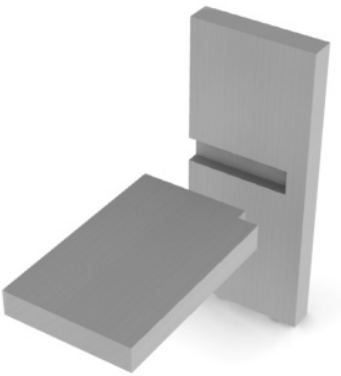
(iv) The rate of deforestation of our tropical rainforests is alarming.

(a) State **TWO** reasons why rainforests should be conserved.
(b) Suggest **TWO** ways that we can reduce our use of hardwoods.

4. (i) State the correct name for each of the gauges labelled **A**, **B** and **C** below.



(ii) With the aid of notes and ***neat freehand sketches***, describe how the gauge labelled **B** would be **set** and **used**.

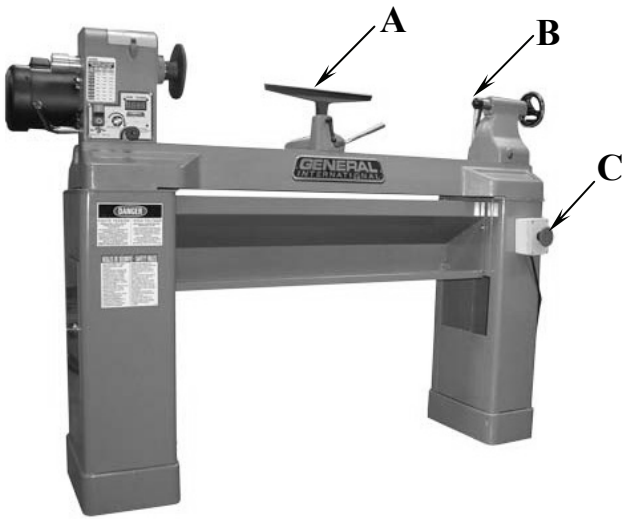


(iii) The diagram shows a stopped housing joint often used in bookshelves. With the aid of notes and ***neat freehand sketches***, describe the stages in **marking out** and **removing the waste** on each piece.

(iv) The chisel is one of the most frequently used hand tools in the M.T.W workshop. State **TWO** safety precautions that should be observed when using chisels.

5. Answer 5A or 5B

5A. The diagram on the right shows a woodturning lathe.



(i) Name the parts labelled **A**, **B** & **C** and state the function of each part.

(ii) The diagram below shows a leg of a chair which has been turned on a lathe.

With the aid of notes and ***neat freehand sketches***, describe **ONE** method that could be used to make another leg identical to the one shown.

(iii) With the aid of notes and ***neat freehand sketches***, describe how a piece of wood would be **prepared** and **mounted** on a lathe.

(iv) State **THREE** safety precautions that should be observed when turning wood on a lathe.

OR

5B. The diagram shows a coffee table made from a hardwood.

(i) Name **THREE** clear finishes that could be applied to the table.

Select **ONE** finish that would be best suited for the table and give **TWO** reasons for your choice.

(ii) With the aid of ***neat freehand sketches,*** describe, in detail, the steps you would follow to **prepare** the wood for the finish you have chosen.

(iii) State **TWO** specific safety precautions that should be observed when using applied finishes.

(iv) Select a suitable hardwood for the manufacture of the coffee table and give **TWO** reasons for your choice of hardwood.