Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination, 2014

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

Monday, 16 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** questions.*

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

(d) *Write your examination number on the answerbook 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 answerbook supplied.

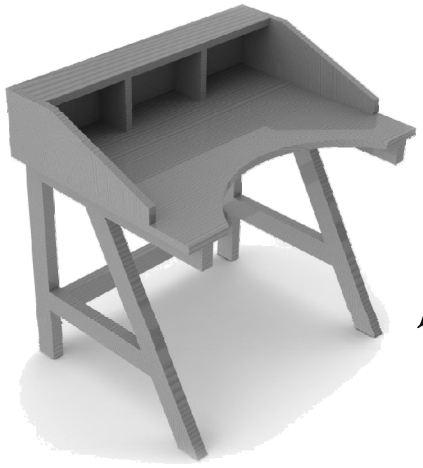
1. The diagrams show a wooden study desk.

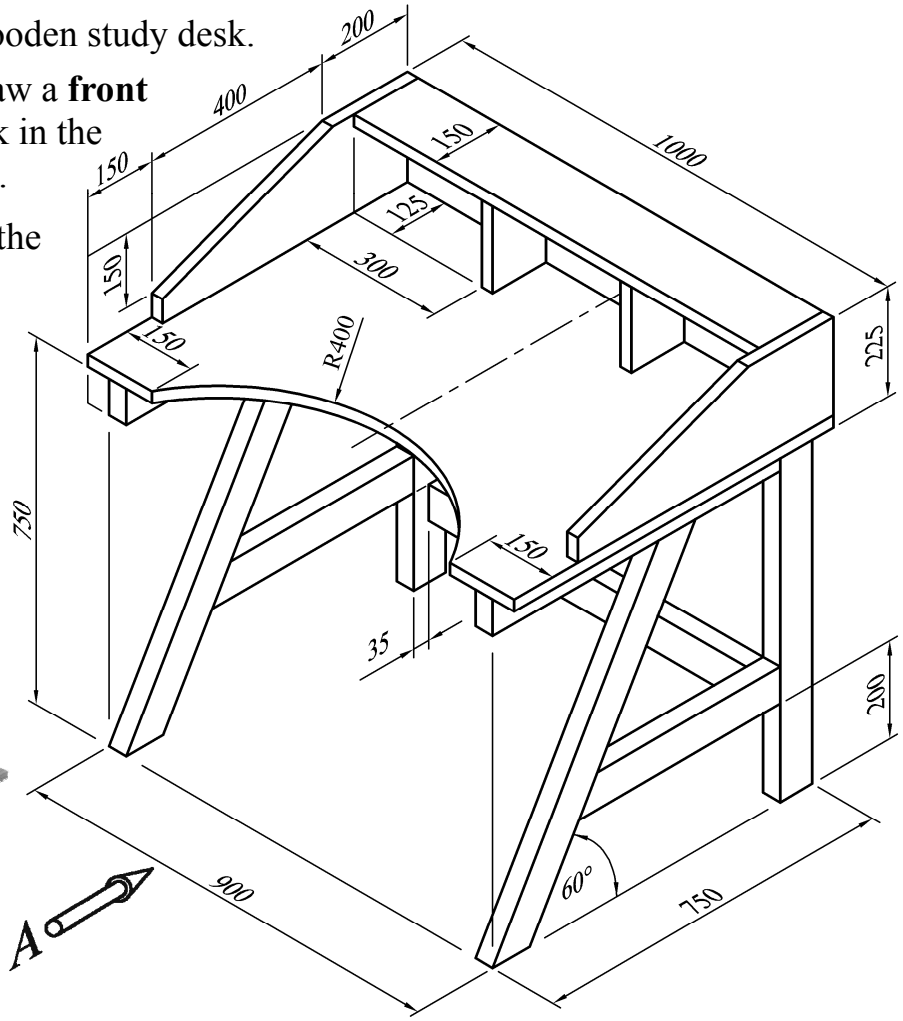
(i) To a scale of 1:5, draw a **front elevation** of the desk in the direction of arrow **A**.

(ii) Project a **plan** from the elevation.

(iii) Project an **end view** from the elevation.

Note: Hidden detail is not required.





Supporting-Frame Material: 75mm × 40mm
All other material: 25mm thick

2. (i) Two stages in a typical design process are **Investigation/Research** and **Evaluation**. Briefly explain these **TWO** stages.

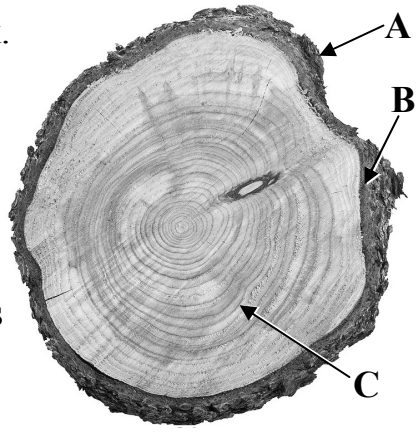
(ii) The diagram shows a collection of magazines and remote controls found in most homes.

Using notes and ***neat freehand sketches*** to communicate your ideas, design a suitable wooden unit to store ten magazines and four remote controls. The finished unit must be portable and have a secondary function.

(iii) Describe using notes and ***neat freehand sketches*** how you incorporated the following requirements into your final design solution:

(a) The portability of the unit;
(b) The secondary function.

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



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

(ii) A tree is divided into three main parts: **roots**, **trunk** and **crown**. Using notes and ***neat freehand sketches***, describe each part and state its function.

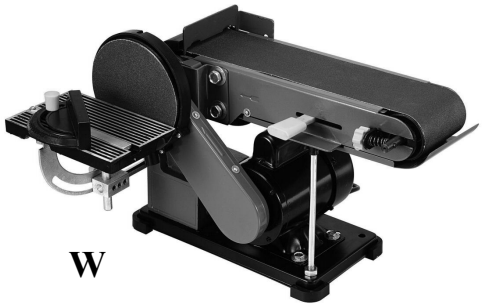
(iii) Food for a tree is produced by a process known as **photosynthesis.**
Using notes and ***neat freehand sketches***, briefly describe the process of **photosynthesis**.

(iv) The conservation of tropical rainforests is essential for environmental reasons.

(a) Give **TWO** reasons why we should conserve these rainforests.

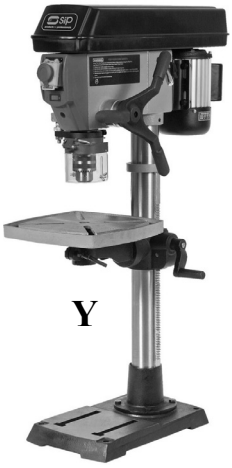
(b) Suggest **TWO** ways in which we can continue to use attractive hardwoods in an environmentally friendly manner.

4. (i) Name the woodworking machines labelled **W**, **X**, **Y** and **Z** below and briefly describe what **each** machine is used for.

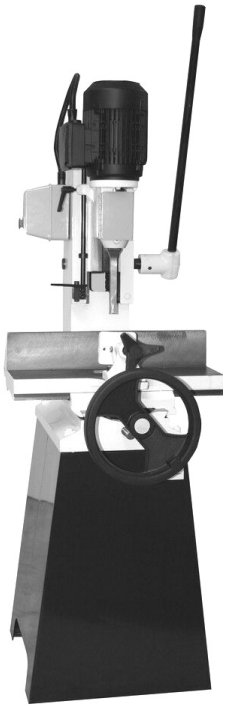


W

X



Y



Z

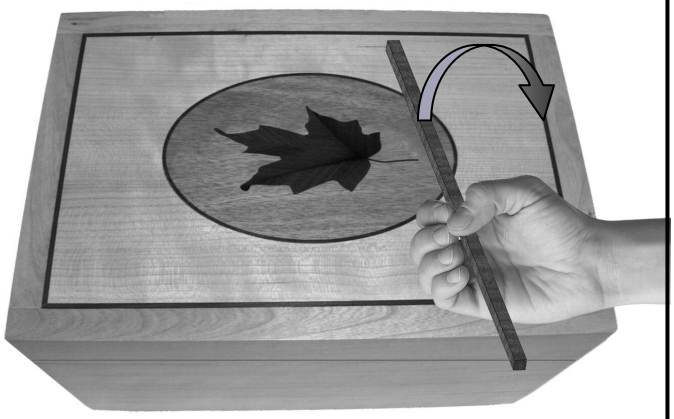
(ii) With the aid of notes and ***neat freehand sketches*** describe how the machine labelled **Z** would be **set** and **used**.

(iii) State **THREE** safety precautions that should be observed when using the machine labelled **Y** above and briefly outline the reason for **each** precaution.

(iv) Give **TWO** reasons why an electrical **transformer**, as shown, is used with power tools.

5. Answer 5A *or* 5B

5A. The diagram shows a jewellery box. There is a dark inlay strip around the top edge of the box. There is also a marquetry design of an ellipse and maple leaf veneered in the centre.



(i) With the aid of notes and ***neat freehand sketches,*** describe how to cut the trench for the inlay strip parallel to the outer edges of the jewellery box.

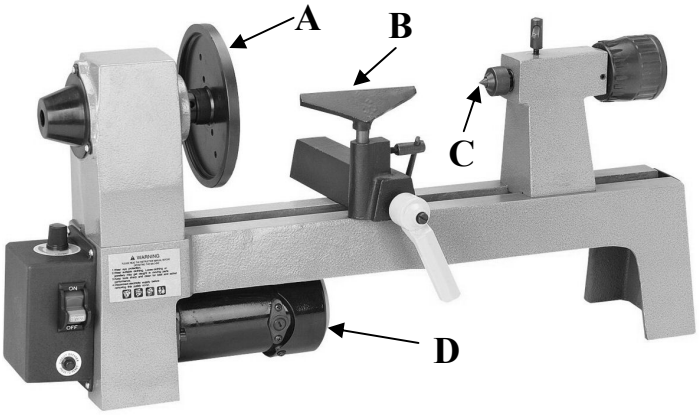
(ii) Describe how to transfer the ellipse and maple leaf design from a sheet of paper to the veneer.

(iii) With the aid of notes and ***neat freehand sketches,*** describe how to cut the veneers to ensure that they fit accurately.

(iv) Name **ONE** method of manufacturing veneers, and use a ***neat freehand sketch*** to describe the manufacturing process.

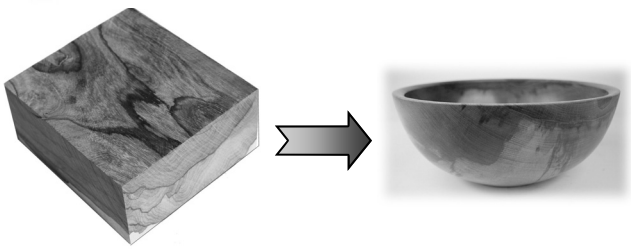
OR

5B. The diagram shows a bench-top woodworking lathe.



(i) Name the parts of the lathe labelled **A**, **B**, **C** and **D** and briefly describe the function of each part.

(ii) The diagram shows a block of wood which is to be turned as a bowl.



With the aid of notes and ***neat freehand sketches***, describe how such a block should be **prepared** and **mounted** on a lathe for turning.

(iii) Suggest a suitable speed (high, medium or low) for turning the bowl and give a reason for your answer.

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