Junior Certificate Examination, 2019

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

Monday, 17 June
Afternoon, 2:00 - 4:00

Instructions
(a) Write your examination number in the box provided and on all other pages used.
(b) This booklet must be handed up at the end of the examination.
(c) Answer any sixteen questions.
(d) All questions carry equal marks.
(e) Answer the questions in the spaces provided.

Examination Number

<table>
<thead>
<tr>
<th>Question</th>
<th>Marks</th>
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</thead>
<tbody>
<tr>
<td>Section A</td>
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<td>5</td>
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<td>5A or 5B</td>
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<td>Total</td>
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<tr>
<td>Irish Bonus</td>
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<tr>
<td>Grand Total</td>
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</tbody>
</table>

Note: The mark in row 3 (or row 5 if an Irish bonus is awarded) must equal the mark in the Grand Total box on the script.
1. (i) Name the woodworking tool shown.

NAME

(ii) Give ONE specific use for this tool.

USE

2. The piece of timber is finished with an edge moulding as shown.

   (i) Name the edge moulding.

NAME

   (ii) Identify ONE appropriate method of applying this edge moulding.

METHOD

3. The diagram shows a common type of hinge.

   (i) Name this hinge type.

NAME

   (ii) Why would you use this specific type of hinge?

USE

4. (i) Name the tool shown.

NAME

(ii) Give ONE specific use for this tool in MTW.

USE
5. CAD/CAM is commonly used in industry to generate models or prototypes prior to mass production.
   (i) What do the letters CAM stand for?
   
   C
   A
   M

   (ii) Give ONE advantage of using CAM to generate a prototype.
   ADVANTAGE

6. The board shown has become distorted across its width.
   (i) What is this distortion called?
   ANSWER

   (ii) What causes a board to distort in this manner?
   ANSWER

7. The image shows a wooden stand for personal items which is to be stained and finished with two coats of varnish.
   The wood surface has some indents which require filling prior to finishing.
   Identify FIVE steps, in the correct sequence, which should be followed when surface finishing the artefact.

   1. 2. 3. 4. 5.

8. The diagram shows the tip of a chisel.
   What are the correct names for the angles labelled A and B?

   ANGLE A
   ANGLE B
9. The diagram shows the leaves of five common Irish trees. From the following list, identify each tree: **Beech, Horse Chestnut, Holly, Poplar, Sycamore**.

![Leaves diagram]

10. The diagram shows a log being peeled to produce a continuous thin layer of wood.
   (i) What is this method of wood preparation called?
   **NAME**

   (ii) Give **ONE** use for this thin layer of wood.
   **USE**

11. (i) Name the tool shown.
   **ANSWER**

   (ii) State **ONE** appropriate use for this tool.
   **USE**

12. The image shows the wiring of a three-pin plug.
   (i) State the correct colour of each wire.

   ![Three-pin plug]

   **LIVE**  **NEUTRAL**  **EARTH**

   (ii) What is the function of the **FUSE** in a plug?
   **FUNCTION**
13. The bakery display case shown is made from wood and acrylic. The machine shown is used to bend the acrylic.
   (i) Name the machine.
   NAME
   (ii) Use a tick (✔) in the appropriate box below to indicate if acrylic is:
   THERMOSETTING ☑ or THERMOPLASTIC ☑

14. Calculate the Moisture Content (as a %) of a piece of seasoned wood, given the following:
   Wet weight = 21.6 grams
   Dry weight = 20 grams
   Calculation:
   ANSWER

15. (i) Name the woodworking machine shown.
   NAME
   (ii) What is the function of the part labelled A?
   PART A
   (iii) State ONE specific safety precaution that should be observed when using this machine.
   PRECAUTION

16. The diagram shows a cordless drill being used by a student to insert a screw.
   (i) What is the correct name for the turning force being applied by the drill to the screw?
   FORCE
   (ii) Name ONE other type of force.
   FORCE
17. The graphic below shows a **Dovetail Halving Joint**.

Sketch the marking out of both parts of the joint on the piece of wood on the right.

18. Using a tick (✓) in the table below, identify whether each tree is **Hardwood** or **Softwood**.

<table>
<thead>
<tr>
<th>Hardwood</th>
<th>Trees</th>
<th>Softwood</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Birch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cedar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Norway Spruce</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Larch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Willow</td>
<td></td>
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</tbody>
</table>

19. Name the parts of the woodturning lathe labelled in the image.

A
B
C
D
E
20. The image on the right shows a wooden bench. An Elevation and End View of the bench are shown in the dimensioned drawing below.

The bench is assembled using butt joints, screws and tusk tenon joints.

All material is 18 mm thick.

(i) Complete the cutting list given in the table below.

(ii) Insert the missing dimension in the box indicated by the hand in the Elevation.

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Length</th>
<th>Width</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bench Top</td>
<td>1</td>
<td>850</td>
<td>300</td>
<td>18</td>
</tr>
<tr>
<td>Vertical Sides</td>
<td>2</td>
<td></td>
<td>260</td>
<td>18</td>
</tr>
<tr>
<td>Top Horizontal Rails</td>
<td>2</td>
<td>770</td>
<td>100</td>
<td>18</td>
</tr>
<tr>
<td>Base Legs</td>
<td>2</td>
<td>320</td>
<td>50</td>
<td>18</td>
</tr>
<tr>
<td>Bottom Horizontal Rail</td>
<td>1</td>
<td></td>
<td>50</td>
<td>18</td>
</tr>
<tr>
<td>Wedge</td>
<td>2</td>
<td></td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Brass Screws</td>
<td></td>
<td>40</td>
<td></td>
<td>Ø4</td>
</tr>
<tr>
<td>Screw Cups</td>
<td>8</td>
<td></td>
<td></td>
<td>Ø10</td>
</tr>
</tbody>
</table>

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

Make sure your Examination Number is on the front page.

Junior Certificate, 2019
Materials Technology (Wood), Section A - Higher Level
There is no examination material on this page
Junior Certificate Examination, 2019

Materials Technology (Wood)

Higher Level

Section B (60 marks)

Monday, 17 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 should be done freehand.

(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 graphics show details of a planter stand.

   (i) To a scale of 1:4, draw an **Elevation** of the stand in the direction of arrow A.

   (ii) Project an **End view**.

   (iii) Project a **Plan** from the elevation.

   **Note:** *Hidden detail is not required.*

   (iv) Using notes and a **neat freehand sketch**, suggest a suitable method of joining the leg L and rail R.

2. (i) Two stages in a typical design process are **Analysis of Brief** and **Evaluation**. Explain these **TWO** design stages.

   (ii) Storage units are often used in the home. These units are used to store and organise items. They are made in many shapes and sizes.

   Using notes and **neat freehand sketches** to communicate your ideas, design an attractive **Storage Unit** with internal sub-divisions.

   (iii) Using notes and a **neat freehand sketch**, briefly describe **ONE** woodworking joint used in your proposed design.

   (iv) Lids, covers or doors are often added to storage units to enhance their appearance and functionality.

   Using notes and a **neat freehand sketch**, show how you would attach a lid, cover or door to a storage unit.

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**Framing material:** 60mm x 20mm

**All other material:** 20mm thick
3. The diagram shows one method of seasoning timber.

(i) State THREE advantages that seasoned timber has over unseasoned timber.

(ii) What is the correct name for the seasoning method shown?

Explain with the aid of notes and neat freehand sketches what happens during this seasoning process, making particular reference to the parts labelled in the diagram.

(iii) Name ONE other method of seasoning timber.

Compare the two methods of seasoning under EACH of the following headings: Moisture Content, Duration, Defects and Cost.

(iv) The ends of the planks tend to split during the seasoning process.

Describe with the aid of notes and neat freehand sketches, ONE method of preventing this.

4. (i) State the correct name for EACH of the boring tools labelled A, B, C and D.

(ii) Draw a table to compare EACH of the above tools under the following headings: Portability, Boring Speed, Boring Depth, Safety, Cost and Accuracy.

(iii) The machine labelled D above has many features which can be set by the user.

With the aid of notes and neat freehand sketches, identify and describe any THREE of these features.

(iv) State THREE safety precautions that should be observed when using the tools above and briefly outline the reason for EACH precaution.
5A. The images show a wooden serving tray. The base of the tray has a veneered design (marquetry).

(i) Using notes and a neat freehand sketch describe, in detail, how to transfer the design from a sheet of paper to the wooden veneer.

(ii) Using notes and neat freehand sketches, describe how you would cut the veneers to ensure that they fit together accurately.

(iii) Explain how using veneers conserves rare and expensive woods.

(iv) Slots, as shown, are to be cut to allow the tray to be carried safely. Describe, using notes and neat freehand sketches, how you would form these slots.

OR

5B. The image shows a wooden rocking horse for a child.

(i) The rockers on the toy horse are laminated. Give TWO advantages and TWO disadvantages of laminating the rockers for the horse.

(ii) Using notes and neat freehand sketches describe, in detail, the steps to be followed in producing ONE of these laminated rockers.

(iii) Select an appropriate clear finish for this toy and give TWO reasons in support of your answer.

(iv) Describe, in detail, the steps involved in preparing the wood for, and in applying your selected finish to the rocking horse.