



# **JUNIOR CERTIFICATE EXAMINATION**

**2002**

***MATERIALS TECHNOLOGY WOOD***

**HIGHER AND ORDINARY LEVELS**

**CHIEF EXAMINER'S REPORT**

## MATERIALS TECHNOLOGY WOOD 2002

### INTRODUCTION

Materials Technology Wood is examined at two levels – Ordinary Level and Higher Level.

The examination at both levels comprises two components:

- Project – executed in the school under the supervision of the teacher
- Theory Paper.

The following table shows the distribution of marks for each component:

**Table 1: Distribution of Marks**

	Theory Paper	Project	Total
Ordinary Level	100 marks	200 marks	300
Higher Level	100 marks	200 marks	300

### Determination of Levels

The level at which candidates present for the examination is determined by the level at which they present for the Project. Candidates select one Design Brief, either at Ordinary or at Higher level, usually in early November and candidates are then required to sit the theory paper at the same level as that of the chosen Design Brief.

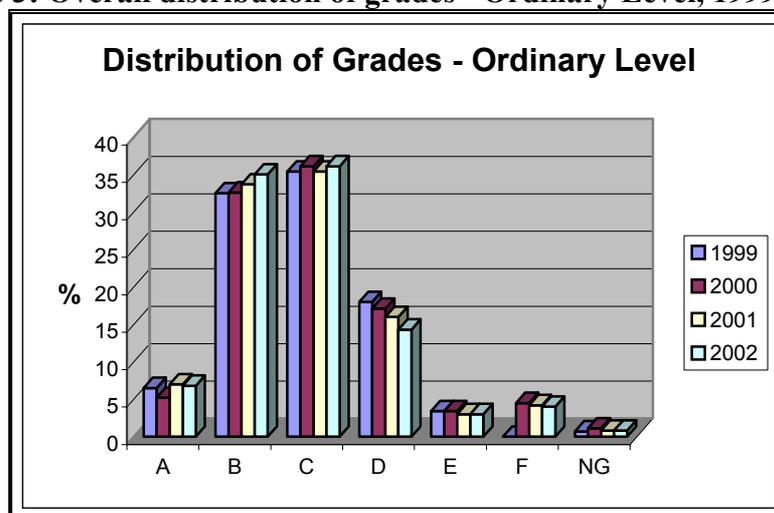
### Overall Results – Ordinary Level - Project and Theory Combined

The following table and graph show the overall distribution of grades for 1999, 2000, 2001 and 2002.

**Table 2: Overall distribution of grades - Ordinary Level**

Year	A	B	C	D	E	F	NG	TOTAL
1999	6.5	32.5	35.4	18.0	3.4	3.5	0.7	5253
2000	5.2	32.6	36.1	17.1	3.4	4.5	1.1	5215
2001	7.0	33.7	35.4	16.0	3.0	4.2	0.8	5492
2002	6.8	35.0	36.1	14.3	3.0	4.0	0.8	4895

**Table 3: Overall distribution of grades - Ordinary Level, 1999 – 2002**



## Commentary – Grade Distribution at Ordinary Level

The distribution of grades at Ordinary Level shows a marked consistency over the past four years. A total of 87.1% of candidates achieved a C grade or higher, the percentage of candidates obtaining a D grade or higher remains over 97% and this reflects very well on the efforts of the candidates and is to be welcomed.

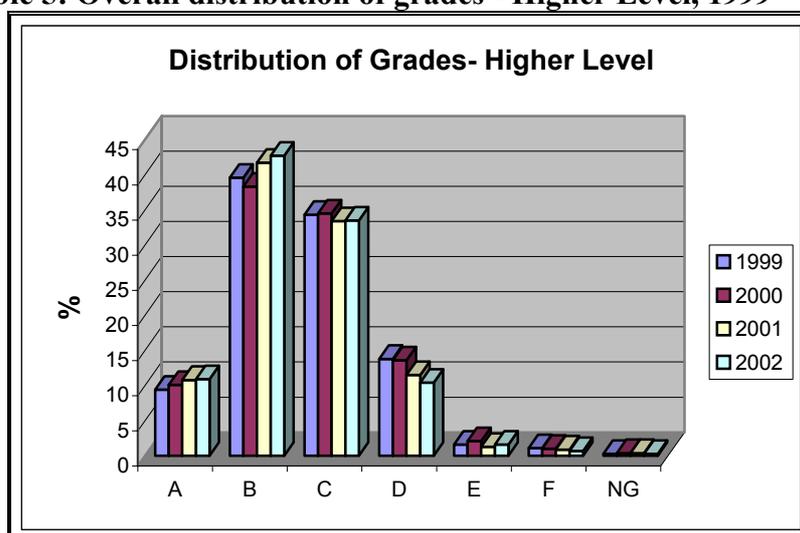
## Overall Results – Higher Level - Project and Theory Combined

The following table and graph show the overall distribution of grades for 1999, 2000, 2001 and 2002.

**Table 4: Overall distribution of Grades - Higher Level**

Year	A	B	C	D	E	F	NG	TOTAL
1999	9.4	39.6	34.3	13.8	1.6	1.1	0.3	10965
2000	10.1	38.3	34.5	13.6	2.1	1.0	0.4	10358
2001	10.8	41.7	33.4	11.5	1.3	0.9	0.4	10230
2002	10.9	42.7	33.5	10.4	1.6	0.6	0.3	10781

**Table 5: Overall distribution of grades - Higher Level, 1999 – 2002**



## Commentary – Grade Distribution at Higher Level

As can be seen from the above table, there is very little overall variation in the distribution of grades across the four years at Higher Level. The percentage of candidates failing to obtain a D grade has fallen slightly since 1999 - from 3.0% in 1999 to 2.5% in 2002. This improvement in candidate performance is welcomed. There has also been a slight increase in the A+B+C grades, however the overall grade distribution pattern remains almost constant across the four years,

## Project Work.

The Project is awarded 66% (200marks) and comprises two components:

- A design folio
- An artefact

## Design Briefs

A list of six Design Briefs - three at Ordinary Level and three at Higher Level is issued to the candidates in early November. The candidate selects one design brief from the list and is required to complete the project - both design folio and artefact - by the end of April of the year of the examination. The project is assessed in June in the schools by examiners appointed by the Department of Education and Science.

## Authenticity of Project Work

Accompanying the design briefs to candidates is a list of instructions regarding the proper execution of project work for the purposes of assessment. These instructions requires that:

1. *Each project submitted for assessment must be the candidate's own work.*
2. *It must be executed in the school under the supervision of the teacher.*
3. *Each candidate must submit a separate, distinct project.*

Teachers are required to verify that each candidate has fulfilled the requirement for the submission of project work as outlined. Where a candidate has not fulfilled these requirements and where a teacher is therefore unable to authenticate the project work as the candidate's own individual work, the teacher indicates this by signing a form P20.

In cases where the teacher is unable to authenticate the project as the candidate's own individual effort, marks are withheld for the project component of the examination in Materials Technology Wood. This upholds the principle of inter-candidate equity and ensures that marks are only awarded for the authentic work of the candidate. Where marks are withheld, a candidate may appeal the decision and is informed of the procedures by which the decision may be appealed.

The co-operation of teachers is essential in maintaining the integrity of the examination process and in ensuring that the project work assessed is solely that of the candidate.

The invaluable assistance of the teachers and the school authorities in maintaining the integrity of the assessment process is very much appreciated.

## Weightings – Folio and Artefact

There are different weightings for design folio and artefact at both levels. The following table shows the weightings of marks for Design Folio and Artefact at both levels:

**Table 6: Overall weightings of marks – Design Folio and Artefact**

Distribution of marks	Design Folio	Artefact	Total
Ordinary Level	50 marks	150 marks	200 marks
Higher Level	70 marks	130 marks	200 marks

## Distribution of Marks - Folio and Artefact

Table 7 shows the distribution of marks for both the Design Folio and the Artefact at both Ordinary and Higher Levels.

**Table 7: Overall distribution of marks – Design Folio and Artefact**

Marking Headings	Ordinary Level	Higher Level
Analysis of brief	10	10
Investigation/Research	10	10
Design Ideas/Solution	10	20
Sketches/Working Drawing	10	20
Final Evaluation	10	10
<b>Folio Total</b>	<b>50</b>	<b>70</b>
Fitness for Purpose	20	20
Appropriate Use of Materials	10	10
Creativity	20	20
Demonstration of skills	60	40
Quality of Finish	20	20
Overall Appearance	20	20
<b>Artefact Total</b>	<b>150</b>	<b>130</b>
<b>TOTAL</b>	<b>200</b>	<b>200</b>

## **Project Work - General Observations**

The overall standard of candidates' work is very satisfactory. A large proportion of candidates continue to produce excellent ideas, which are very well developed and skilfully completed. The most popular brief at Higher Level was the 'Music System Stand' followed by the 'Environment Artefact'. At Ordinary Level the most popular brief was the 'Mirror' followed by the 'Lamp'. The interpretation of the design briefs was generally satisfactory.

### ***Time Management***

Time is a limited and valuable resource and candidate should be encouraged to manage their time resources carefully. As soon as a candidate receives the Design Briefs, they should prepare a time schedule for the design and manufacturing processes. The schedule should tabulate the time allocation for each element of the design and make components. Teachers should check that candidates adhere to the time schedule, thus ensuring that project work is completed by the appointed closing date.

### ***Size of Artefact***

Candidates are advised to read the Design Briefs carefully and to pay attention to the size of the artefact, which requires careful thought at the Investigation/Research stage. Small, well-designed artefacts are more appropriate responses to the Design Briefs, obtain higher marks than large poorly designed ones, are economical in the use of materials and are also easier to store.

### ***Design Folio***

There has been a steady improvement in the presentation of the design folio and this is reflected in the marks obtained. To gain maximum marks, it is necessary to follow the outline of a design process as outlined in the instructions to candidates accompanying the Design Briefs. It is recommended that the design folio be developed in tandem with the development of the artefact and that the folio includes a record of all processes from investigation and research to final evaluation.

### ***Sketching***

The ability to convey design ideas by means of freehand sketches is an essential competence in the study of Materials Technology Wood. Particular emphasis should be placed on the development of freehand sketching and the ability to produce competent freehand sketches takes time and practice to develop. Well-executed and properly proportioned freehand sketches should be shaded, rendered and coloured, as appropriate.

### ***Use of Information Technology***

The Design Folio also provides an ideal context for the expression of IT competencies. Candidates should be encouraged to demonstrate their IT capabilities, not only in word processing but in areas such as CAD, image scanning, image editing and the use of the digital camera. Information sourced from the Web should not merely be reproduced, but should be placed in its proper context and be relevant to the project being undertaken.

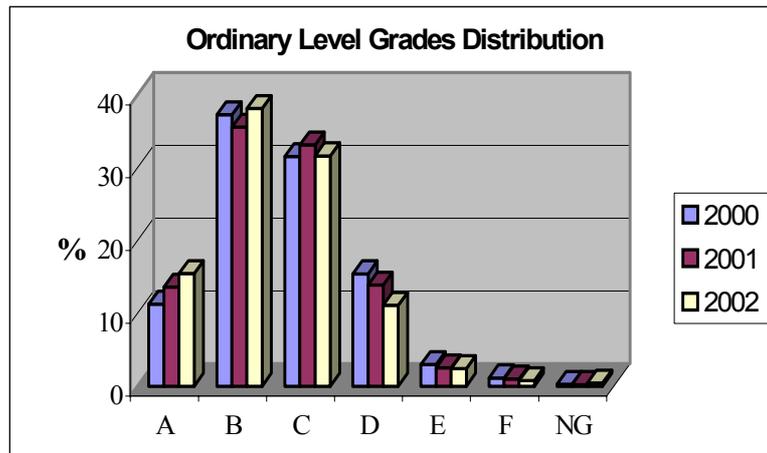
## **Project Work Ordinary Level**

The following table and graph show the distribution of grades for project work at Ordinary Level for 2000, 2001 and 2002.

**Table 8: Distribution of grades - Ordinary Level for 2000, 2001 and 2002**

<b>%</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>NG</b>
<b>2000</b>	11.28	37.30	31.58	15.46	2.98	1.13	0.27
<b>2001</b>	13.61	35.59	33.17	13.90	2.51	1.00	0.23
<b>2002</b>	15.50	38.14	31.65	11.10	2.42	0.76	0.44

**Table 9: Distribution of grades for project work - Ordinary Level 2000 - 2002**



**Project Work - Commentary**

There is a steady increase in the number of candidates achieving an ‘A’ grade and a decrease in the number of candidates achieving a ‘D’ while the other grades remain almost unchanged.

Two main factors can be identified as contributing to this trend:

- The popularity of particular Design Briefs at Ordinary Level in the past two years, notably the clock in 2001 and the mirror in 2002.
- An obvious improvement in the quality of the Design Folios, which is commended.

**Project Choice at Ordinary Level**

*Bathroom Mirror expressing a marine theme*

Over half the candidates responded to this brief and the general level of manufacturing skill was high. There was a general improvement in the presentation of the Design Folios. A wide variety of solutions was presented and candidates had little difficulty in including a marine theme.

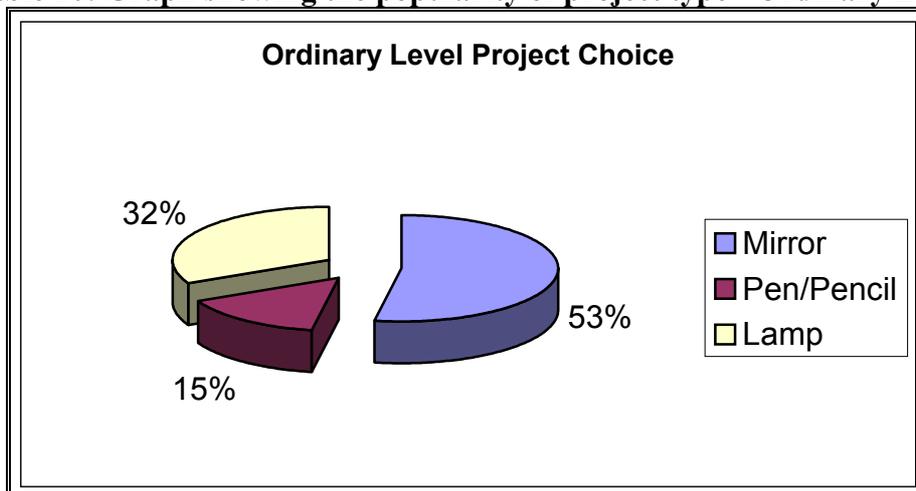
*Lamp suitable for use in a young person's bedroom*

The realisation in this project was generally of a high standard with lathe work being used to good effect. The Design Folios often did not match the standard of the realisation and the theme was not addressed in any great depth in many cases.

*Desktop artefact to hold pens, pencils and a calculator*

This was the least popular of the projects, was mostly of boxlike construction and showed the least variety in design ideas.

**Table 10: Graph showing the popularity of project type - Ordinary Level**



## Choice of Project at Higher Level

Teachers report that personal preference is the strongest factor influencing candidates' choice of project. An analysis of candidates' choice of project at Higher Level is outlined below.

### *Elegant stand to hold a small Music System*

A total 74% of candidates at Higher Level choose this project. Many candidates demonstrated a high level of manufacturing skills. In many instances, groups of projects, although different in appearance, emanated from a similar approach – that of shelf or cabinet type project. In such instances, individuality and originality of design were not in evidence. In particular, the analysis, investigation/research and the design ideas/solutions were not considered in sufficient depth. Some candidates achieved creative and innovative solutions and were rewarded accordingly.

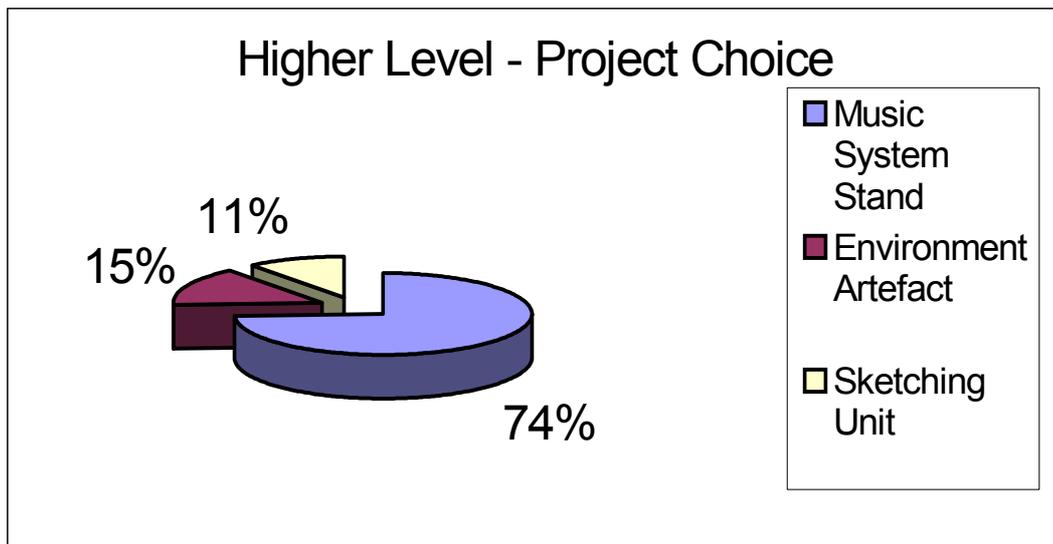
### *Artefact for an individual or group to celebrate involvement in a local environmental project*

This project allowed many candidates to display a diversity of original ideas. It was obvious that many candidates had given careful thought to the development of their design ideas, resulting in a wide variety of interesting and unique solutions. The folios recorded the development of such ideas and candidates who attempted this Design Brief generally scored well. This approach highlights the importance of detailed research and good planning at the design stage. Proper research and planning makes the subsequent stages easier to complete.

### *Portable Writing/Sketching Unit*

Though the least popular project at Higher Level, this project was generally well attempted. There were many examples of ingenuity in design, reflecting considerable effort by some candidates at the research and design stages. Many of the resulting artefacts were well executed and such projects received the highest grades.

**Table 11: Graph showing the popularity of project type - Higher Level**



## Theory Examination – Ordinary and Higher Levels

The theory examination in Materials Technology Wood is of two hours duration and comprises two sections - Section A and Section B

### Section A

This consists of 20 short answer questions from which the candidate is required to answer 16. The candidates fill in the answers on the examination paper and this section of the paper is handed up at the end of the exam.

### Section B

This consists of 5 long answer questions from which the candidate is required to answer 3 questions. In Question 4, the candidate has the choice of either 4A or 4B. The layout and format of both papers were similar to those of previous years.

## Theory Examination – Ordinary Level

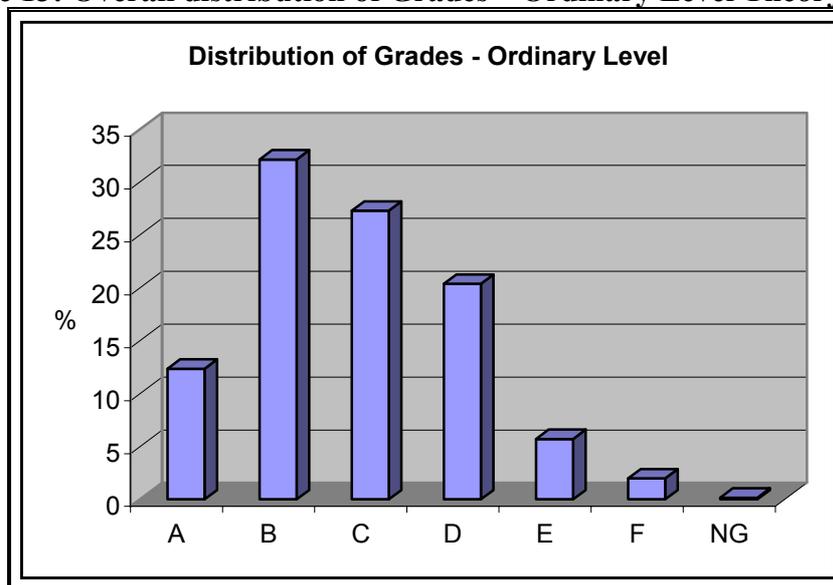
The table and graph below show the distributions of grades in the theory paper - Ordinary Level - 2002.

**Table 12: Overall distribution of Grades – Ordinary Level Theory 2002**

2002	A	B	C	D	E	F	NG
Percent	12.34	32.12	27.28	20.38	5.72	1.99	0.17

The following graph shows the distribution of grades at Ordinary Level.

**Table 13: Overall distribution of Grades – Ordinary Level Theory, 2002**



## Observations – Theory Paper

From the above table, it can be seen that over 92% of the candidates obtain a grade D or higher in the Theory Paper, Ordinary Level and this is commendable. The percentage of candidates who did not obtain a D grade is 7.9%, a slight increase on the 2001 figure of 6.8%. The percentage of candidates obtaining an A grade is 12.3%, a slight decrease on the 2001 figure of 14.3% and on the 2000 figure of 12.8%. As seen from the table below, the 2002 figures fall within the pattern of grade distribution over the past few years.

**Table 14: Percentage distribution of Grades – Ordinary Level Theory, 1999-2002**

	A	B	C	D	E	F	NG
1999	13.97	32.49	25.43	19.90	6.42	1.63	0.16
2000	12.82	29.22	29.28	20.48	5.45	2.49	0.26
2001	14.33	31.29	28.35	19.28	4.92	1.73	0.10
2002	12.34	32.12	27.28	20.38	5.72	1.99	0.17

## Ordinary Level Theory Paper

### Section A – Short Questions

#### *Observations*

This section of the paper was well answered by most candidates. The questions were clear and specific and required specific information from the candidates. The information sought was based on common workshop practice and the questions were pitched at a level suitable for the candidates. Based on a representative sample of scripts the average mark achieved in this section was 29.8 out of the allotted 40 marks. Just over 1.25% of this sample failed to obtain a D grade in section A (less than 16 out of 40 marks). Candidates are credited for their best 16 answers in this section and some candidates attempted all 20 questions in a strategy designed to maximise marks.

Although the answering in Section A was generally good, some candidates did not attempt the required 16 questions and were therefore considerably disadvantaged.

#### **Question 1** (*Nails*)

Most candidates were able to identify the panel pin but many had difficulty in recognising the cut tack.

#### **Question 2** (*Tools*)

The answering for Part A, the tape measure, was excellent. Part B was not as frequently attempted nor was it as well answered as Part A.

#### **Question 3** (*End grain*)

Almost all candidates attempted this question and the standard of answering was good.

#### **Question 4** (*Bracket*)

Many candidates were unable to name the fitting correctly. However, almost all candidates gave the proper use of the bracket.

#### **Question 5** (*Identification of trees*)

The Oak was most frequently identified, followed by the Sycamore. Candidates were generally able to identify common Irish trees.

#### **Question 6** (*Planing*)

Candidates rarely scored full marks, usually only having one side correct.

#### **Question 7** (*Finishing*)

Very well answered.

#### **Question 8** (*The plane blade*)

This question was generally not well answered

#### **Question 9** (*Annual rings*)

Well answered, with many candidates scoring full marks.

**Question 10** (*Defects*)

Very well answered.

**Question 11** (*Mouldings*)

This question was not popular and many answers were incorrect.

**Question 12** (*Seasoning*)

Almost all candidates attempted this and the answers were frequently correct.

**Question 13** (*Lathe*)

Again this was a very popular question and well answered. Faceplate and spindle were common mistakes.

**Question 14** (*Plywood*)

This question was frequently attempted but was poorly answered by many candidates. Many candidates drew arrows on the top and bottom veneers in the same direction as those given on the middle veneer.

**Question 15** (*Pulleys*)

A very popular question and very well answered.

**Question 16** (*Bench hook, mallet and gauge*)

This question was generally well answered.

**Question 17** (*Bridle joint*)

This question was generally poorly answered and many candidates just drew a front elevation of the assembled joint.

**Question 18** (*Plug*)

This question was generally well answered.

**Question 19** (*Hammer*)

This question was rarely attempted and the answering was generally poor.

**Question 20** (*Computer*)

This question was generally very well answered.

**Section B – Long Answers.**

Candidates were required to attempt 3 out of 5 questions from this section.

**Observations**

**Question 1 – Key rack.** *Drawing, cutting-out and shaping, tools used and finishing*

This was the most popular question in Section B with almost 76% of the representative sample attempting it. Candidates showed that they had a good knowledge of the processes involved in duplicating an irregular shape on to a piece of wood. The descriptions in part (ii) on the cutting out of the key shape were generally too short and lacked the detail required to obtain maximum marks. The sketches were generally not well done. Part (iii) on finishing was well answered.

**Question 2 – Orthographic projection of a letter rack.**

This question was attempted by approximately 50% of the candidates in the sample and was the third most popular question in Section B. The two views required, the front elevation and the end elevation, were correctly identified. A small number of candidates simply reproduced the given pictorial drawing. In general candidates scored highly, with many candidates gaining full marks. Some of the more common mistakes were:

- Failing to find the centers for the circles correctly;
- Failing to use a compass to draw the quarter circles;
- Not including the four main dimensions.

**Question 3 – Cross section of a tree.**

This was the second most popular question, with 56% of the sample selecting it. The answering of part (i) - the bark - was good. There was some confusion in part (ii) between heartwood and sapwood. Many candidates omitted part (iii), which required them to name and describe another part of a tree cross section. Part (iv) was well answered.

**Question 4A – Wood turning.**

This was the fifth most popular question in the representative sample. Candidates were required to sketch a suitable joint to join the two pieces of a candleholder together. Some candidates mistakenly suggested glue as a suitable method of jointing. In part (ii) candidates often failed to describe how to drill vertically but made a good attempt at explaining how to drill to an exact depth of 30mm. The section on safety was very well answered and many candidates achieved full marks.

**Question 4B – Carving**

This was the fourth most popular question in this section with 42% of candidates selecting it. Many candidates who attempted this question had a good knowledge of carving procedures and consequently scored well. In part (ii) candidates were asked to sketch a carving tool that could have been used on the project. The sketches were often of poor quality.

**Note:**

A small number of candidates answered both Q.4A and Q.4B as two of their three questions in Section B. These candidates were disadvantaged as they could only be credited for the better of the two answers.

**Question 5 – Video case holder.**

This was the least popular question with only 22% of the representative sample attempting it. Many candidates showed knowledge of a strip heater but the descriptions of its use were often vague. A step-by-step approach was rarely described. Part (ii) on drilling of Perspex was well answered. Most candidates were able to suggest a suitable modification to the design to stop the cassettes from falling over.

**Summary:**

The layout and content of the paper followed that of previous years. As is the case every year, a large proportion of the candidates that fail to achieve a D grade attempted Section A only. Many candidates attempt only the required number of questions in section B. It should be noted that candidates are marked on their best three answers in this section; thus if candidates have time to spare, they should attempt an extra question in an effort to maximise their marks. A total of 71.74% of candidates achieved a grade C or higher, which reflects well on the candidates' performance at this level.

## Higher Level Theory Paper

### Section A – Short Answers

#### *Observations*

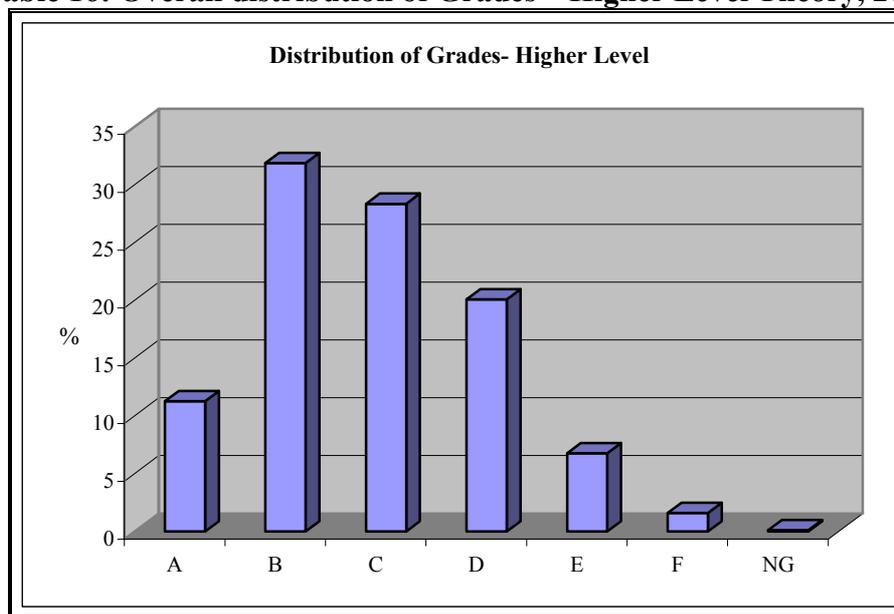
A total of 10,781 presented for Materials Technology Wood at Higher Level in 2002. This represents an increase of 551 candidates on 2001 figures. At a time when the overall numbers sitting the Junior Certificate examination is in decline, this represents a significant increase in uptake and reflects the popularity of the subject for many students.

The following table and graph show the distribution of grades achieved at Higher Level Theory Paper from 1999 to 2002.

**Table 15: Overall distribution of Grades – Higher Level Theory, 2002**

(%)	A	B	C	D	E	F	NG
<b>1999</b>	8.81	26.93	32.29	20.08	7.94	2.84	0.12
<b>2000</b>	9.52	23.72	30.19	24.78	8.82	2.69	0.28
<b>2001</b>	10.77	29.85	30.92	20.32	6.35	1.68	0.11
<b>2002</b>	11.27	31.86	28.33	20.06	6.76	1.61	0.11

**Table 16: Overall distribution of Grades – Higher Level Theory, 2002**



The percentage of candidates obtaining a C grade or higher (71.46%) in 2002 is almost identical to that of 2001 (71.54%). The percentage of candidates achieving an A grade has increased slightly (0.50%) from 2001 and shows an upward trend in the last four years, though levelling off in 2002. The percentage of candidates not achieving a D grade remains fairly constant - 8.48% in 2002 and 8.14% in 2001. This downward trend is to be welcomed and shows a marked improvement on the 2000 figure of 11.79% of candidates who did not achieve a D grade.

The standard of answering varied considerably across the range of questions. This variation was not confined to what are considered new areas within the syllabus, e.g., metals, design, etc., but also included the more traditional areas of the subject. At Higher Level, candidates are expected to demonstrate a sound understanding of the subject content and to reflect this in their answering. Candidates who provide only minimal information cannot hope to achieve high marks. Some candidates did not complete the required three questions in Section B and, in many such instances, were consequently unable to achieve a D grade. Candidates ought to attempt the required number of questions - otherwise their chances of obtaining a D grade are greatly diminished.

### **Section A - Short Answers**

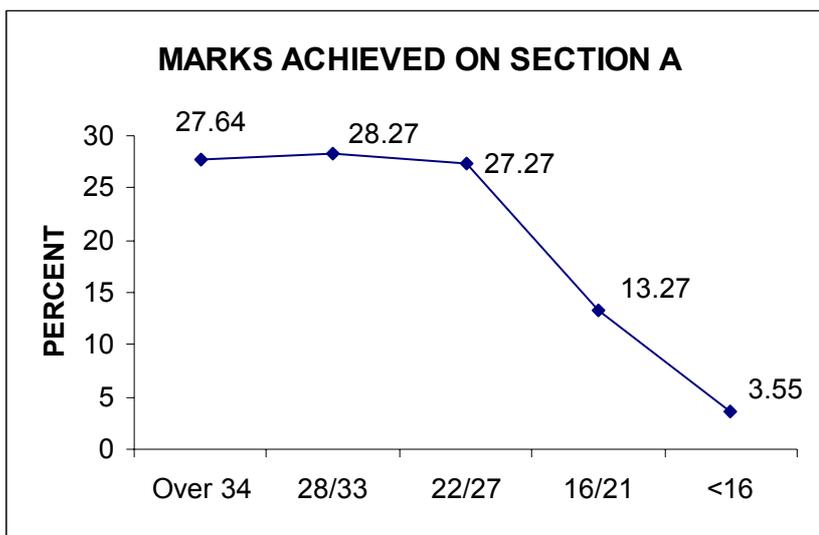
A total of 60% of candidates achieved over 70% of the marks available on this section and over 80% of candidates achieved over 55% in this section. A significant number of candidates attempted additional questions and consequently increased their chances of scoring higher marks.

**Note:**

The following graphs are based on a random sample of 1100 scripts. Over 34 marks equates with an A grade, 28-33 marks a B grade, etc.

The following graph shows the distribution of marks in Section A.

**Table 17- Distribution of marks in Section A**



### **Section A \_ Short Answers**

**Observations**

**Question 1 (Identification of tools)**

This was well answered by most students. “Punch” was the most common answer, with at least one appropriate use given.

**Question 2 (Identification of hinges)**

This was reasonably well answered. Many students identified the piano and butt hinges. Incorrect answers were based on guesswork.

**Question 3 (Defects)**

Overall, this was poorly answered with only a small proportion of candidates correctly naming the defect. Many referred to “shakes” and some candidates mentioned wet rot or wood rot.

**Question 4** (*Sharpening of tools*)

This was answered reasonably well, with most candidates placing two steps in the correct sequence. The removal of burr was frequently placed as the first step.

**Question 5** (*Cramps*)

Most candidates attempted this question and the quality of answering was fair but few candidates correctly named the cramp. However, many listed an appropriate use.

**Question 6** (*Electrical Current*)

This question was generally well answered.

**Question 7** (*Identification of trees*)

This was generally well answered, with the oak and horse chestnut leaves and fruit featuring in most correct answers. Significant numbers referred to “acorn tree” and “conker tree”.

**Question 8** (*Safety*)

This was well answered, with many candidates displaying a good knowledge and understanding of safety issues and safety precautions.

**Question 9** (*Jointing*)

This question was well answered and most candidates gained at least four marks out of the five available. Some candidates sketched a bridle joint. The quality of drawing was good, however most drawings were produced using instruments rather than freehand.

**Question 10** (*Gear trains*)

A consistent pattern was observed in the answering of this question. Part (i) was generally well answered, while Part (ii) was poorly answered. This question was attempted by a majority of candidates.

**Question 11** (*Metals*)

Attempted by many candidates and reasonably well answered. The majority of candidates correctly classified at least two of the four metals.

**Question 12** (*Forces*)

This was generally not well answered, with many answers consisting of guesswork. Many candidates incorrectly gave the answer as torsion.

**Question 13** (*Tooling*)

Over 80% of candidates attempted this question and it was generally very well answered.

**Question 14** (*CAD*)

This was well answered and many candidates gave appropriate reasons based on the accuracy, precision and flexibility of CAD in design.

**Question 15** (*Lathe*)

This question was poorly answered, many candidates correctly identified the faceplate, however few candidates correctly identified the drive centre.

**Question 16** (*Materials*)

Most candidates attempted this question. The majority of candidates correctly associated the artefact with the correct material of manufacture.

**Question 17** (*Design*)

Most candidates attempted this question. The quality of answers was reasonable, focussing mainly on the instability of the unit caused by the location of the legs.

**Question 18** (*Tools*)

This was a popular question and was generally well answered. “Philips” was commonly given as the slot, with advantages relating to grip and slip featuring in part two of the question.

**Question 19** (*Defects in wood*)

This was attempted by over 85% of candidates and was well answered by most candidates.

**Question 20** (*Edge treatment*)

This was reasonably well answered and most candidates referred to iron-on edging treatments. The quality of sketching was generally poor.

**Section B – Long Answers**

The most frequently attempted questions by candidates broadly follow the pattern of the last four years. Question 2, concept design and problem interpretation is the most frequently attempted question with over 75% of candidates attempting this question. Question 3 - seasoning of timber – is the second most popular question and was attempted by almost 70% of candidates. Question 1 - working design drawings – is the third most popular question. Question 4B and question 5 were attempted by almost one third of candidates, and question 4A was the least popular question and was attempted by 27% of candidates.

It is observed that many candidates are not studying the full breadth of the syllabus. It appears that candidates are spending much of the available time on project work, leaving limited time for the study of the theoretical aspects associated with a study of Materials Technology Wood. Teachers should ensure that candidates achieve a balance between the practical and theoretical elements of the course. Time is an important resource and candidates should be encouraged to manage their time resources carefully in order to achieve a balance between time devoted to project work and time devoted to theory.

**Section B****Observations****Note:**

*The following graphs are based on a random sample of 1100 scripts. Over 14 marks equates with an A grade, 14-16 marks a B grade, etc.*

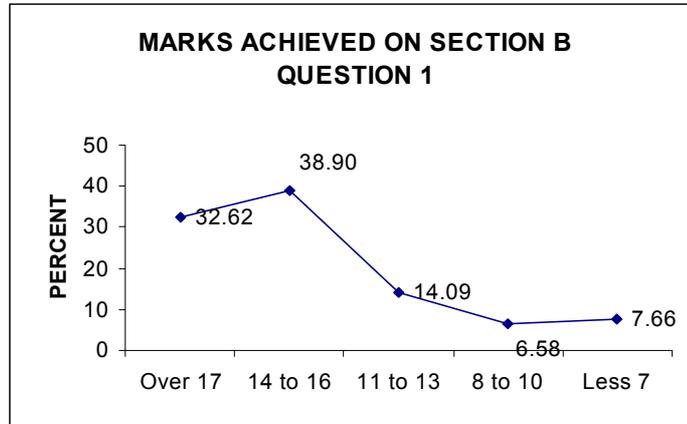
**Question 1. Orthographic Presentation of Artefact (Garden seat)**

As in previous years, this is generally a very well answered question, with candidates showing a sound knowledge of the principles of orthographic projection. Most candidates correctly presented the required views, however hidden detailing and dimensioning were sometimes omitted.

Part (ii) was reasonably well answered, although the quality of some of the sketches was poor and many candidates suggested only the most common jointing techniques.

The following graph shows the distribution of marks for Question 1.

**Table 18 - Distribution of marks - Section B - Question 1**



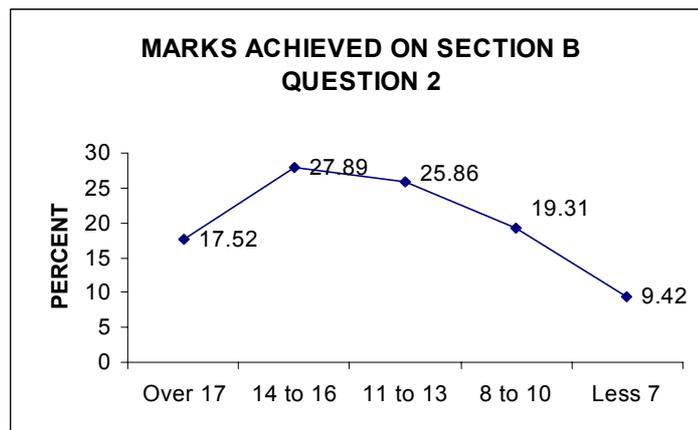
**Question 2. *Artefact Design***

This question is a design-based question and, as in previous years, it focusses on elements of the design process relevant to a design theme, i.e., the storage of telephone materials. This question requires creativity and flair in proposing design solutions and candidates who displayed creative solutions, aided with appropriate sketches, scored well. However, few candidates achieved full marks in this question.

In part (iii) many candidates did not detail the design considerations required; few candidates described how they had accommodated the note pad for writing purposes in their initial design proposal.

The following graph shows the distribution of marks for Question 2.

**Table 19 - Distribution of marks - Question 2**

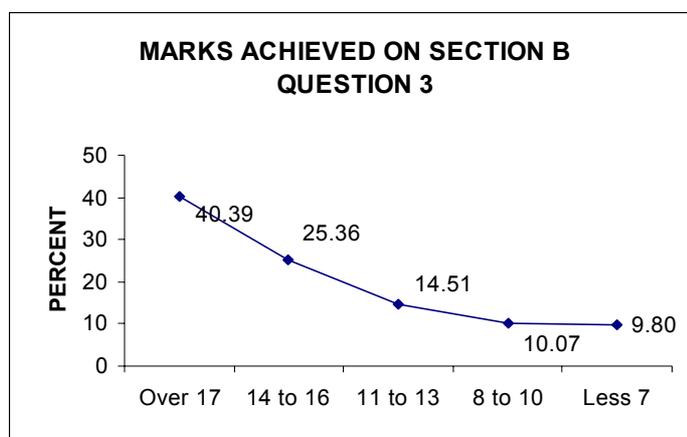


**Question 3. Seasoning and Conservation of Rainforests**

Candidates achieved highest marks in this question and it was generally very well answered. Almost all candidates correctly identified the method of seasoning shown. Most candidates explained the function of at least two of the parts labelled in the diagram, however many candidates were unable to describe the function of the steam jets. Almost all candidates identified another method of seasoning, and listed the advantages and disadvantages of the method of seasoning. Part (iii) was well answered; most candidates identified two reasons why rainforests should be conserved, with many focussing on carbon dioxide/greenhouse gasses and wildlife habitats. Most candidates also gave reasonable suggestions as to how the use of hardwoods could be reduced.

The following graph shows the distribution of marks for Question 3.

**Table 20 - Distribution of marks - Question 3**

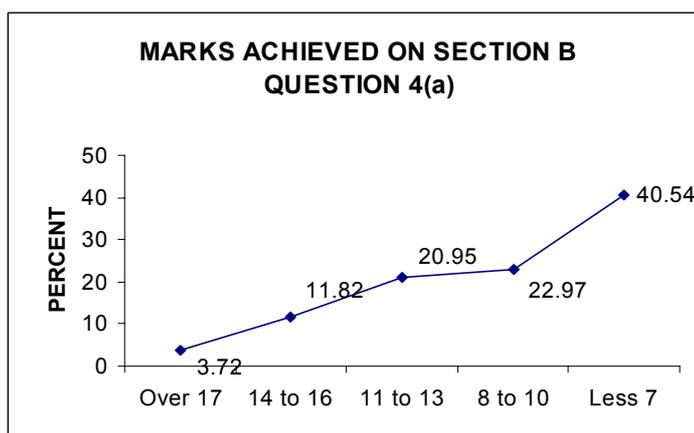


**Question 4(a). Laminating and Finishing**

Laminating posed difficulties for many candidates and part (i) of the question, which required candidates to show how a laminated side is formed, was generally not well answered. Candidates familiar with the process of lamination scored well. In part (ii), many candidates showed that they understood the steps involved in preparation and application of a paint or varnish finish. However, some candidates were unable to state more than one correct reason for the use of stains. Poor sketching by some candidates resulted in a loss of marks.

The following graph shows the distribution of marks for Question 4(a).

**Table 21 - Distribution of marks - Question 4(a)**

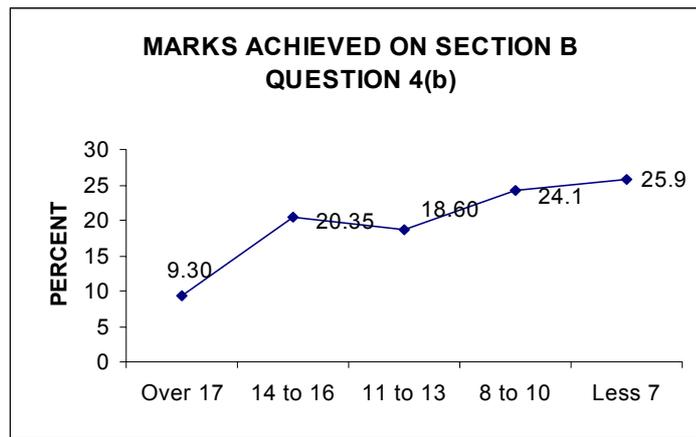


**Question 4(b).** *Plastics - Forming and Drilling*

Part (i) of this question required knowledge of a method for bending acrylic. Candidates who understood the process scored well. However some candidates showed only a vague understanding of the procedures to be followed in bending acrylic using a strip heater. Part (ii) of the question was generally well answered and many candidates showed how to drill acrylic to accommodate a countersink screw. Part (iii) was well answered and most candidates were able to distinguish between thermosetting and thermoplastic materials.

The following graph shows the distribution of marks for Question 4(b).

**Table 22 - Distribution of marks - Question 4(b)**



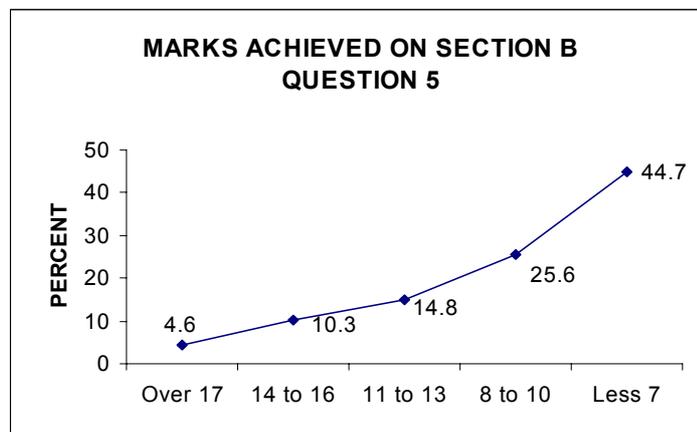
**Question 5.** *Planes and Sharpening*

Part (i) of this question was generally not well answered, with many candidates experiencing difficulties in identifying all three planes. Most candidates were able to explain how a plane might become clogged and how to prevent its recurrence.

Many candidates gave generalised descriptions of the sharpening process for such tools, however candidates who understood the sequence of processes involved scored well.

The following graph shows the distribution of marks for Question 5.

**Table 23 - Distribution of marks - Question 5**



### ***Recommendations for teachers and students:***

- Teachers should only validate project work completed according to the instructions issued by the Department. This is to ensure the integrity of the project work being assessed and to uphold the principle of inter-candidate equity
- Candidates should plan their time carefully, giving careful consideration to the time allocation for both the project and the theory components
- It is recommended that candidates prepare and follow a time schedule for the design and make components of the project work. The schedule should tabulate the time allocation for each component of both the design and manufacture elements
- To facilitate completion of the project work by the appointed closing date, teachers should ensure that candidates adhere to their time schedules
- Candidates are advised to pay attention to the size of the artefact at the design stage. It is recommended that all artefacts be small, well designed, economical in the use of materials and easy to store
- It is recommended that the design folio be developed in tandem with the development of the artefact and that it includes a record of all processes from investigation and research to final evaluation
- Candidates are advised to pay particular attention to the development of freehand sketching. Sketches should be shaded, rendered and coloured, as appropriate
- It is recommended that candidates use the Design Folio to express their aptitudes, not only in word processing, but in areas such as CAD, image scanning, image editing and the use of the digital camera
- It is recommended that information sourced from the Web should not merely be reproduced, but should be placed in its proper context and be relevant to the project undertaken
- To ensure the possibility of obtaining maximum marks, candidates should attempt the required number of questions in both sections of the theory paper
- Neat freehand sketches convey technological data clearly and accurately. Candidates should pay particular attention to the development of sketching abilities
- It is recommended that teachers encourage candidates to plan their work to allow for revision of the theory components of the Materials Technology Wood course.