



**Coimisiún na Scrúduithe Stáit**  
***State Examinations Commission***


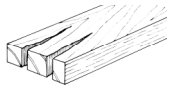

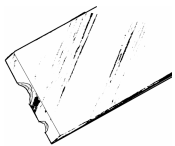

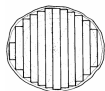

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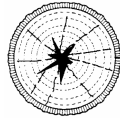
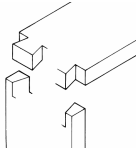

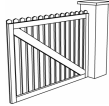
***Junior Certificate Examination 2007***


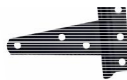
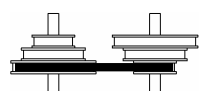
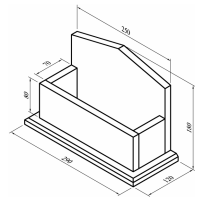
***Materials Technology Wood***  
***Higher Level***  
***Marking Scheme***

## SECTION A

Mark for best 16 answers.


QUESTION	ANSWER	MARKS
1. (i)	Correct name for the tool...  <i>Orbital Sander</i>	 <b>3 marks</b>
(ii)	Purpose of this tool  <i>To prepare wood to take an applied finish</i> <i>To sand/smoothen wood</i>	<b>2 marks</b>
2.	Method to prevent end splitting  <i>Paint ends</i> <i>Fix cleat/band on end</i> <i>Cover with (sack) cloth</i>	 <b>5 marks</b>
3. (i)	One advantage <i>Stronger</i> <i>Easily withdrawn</i> <i>Does not bend as easily</i>	 <b>3 marks</b>
(ii)	Screwhead <i>Countersunk</i>	<b>2 marks</b>
4.	Steps for sharpening... <i>1-Grinding</i> <i>2-Honing</i> <i>3-Burr Removal</i>	 <b>2 marks</b> <b>2 marks</b> <b>1 mark</b>
5. (i)	Layer... <i>Veneer</i>	 <b>3 marks</b>
(ii)	Use of veneer... <i>Plywood manufacture</i> <i>Marquetry, laminating</i> <i>Improve appearance of manu. board or softwood</i> <i>To conserve hardwoods</i>	<b>2 marks</b>
6. (i)	Correct name for method of conversion ... <i>Through and through</i> <i>Slash Sawing</i> <i>Plain Sawing</i>	 <b>3 marks</b>
(ii)	<i>Contains sapwood. Prone to distortion. Poor strength</i>	<b>2 marks</b>
7	Tree identities... <i>A-Ash</i> <i>B-Oak</i> <i>C-Sycamore</i>	 <b>2 x 2 marks</b> <b>1 x 1 mark</b>

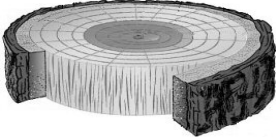

8.	Letters ... <i>W-Water/Weather</i> <i>B-Boil</i> <i>P-Proof</i>		<b>2 x 2 marks</b> <b>1 x 1 mark</b>																		
9.	Two advantages of CAD ... <i>Accuracy</i> <i>Easily edited/modified</i> <i>Easily stored</i> <i>Faster</i>		<b>3 marks</b> <b>2 marks</b>																		
10.	(i) Timber defect...  <i>Star Shake</i> <i>Shake</i>		<b>3 marks</b> <b>1 mark</b>																		
	(ii) Cause ...  <i>Felling</i>		<b>2 marks</b>																		
11.	Completed sketch of box dovetail ...  <i>Dovetails</i> <i>Pins</i>		<b>3 marks</b> <b>2 marks</b>																		
12.	Pillar drill safety precautions ...  <i>Wear goggles, tie up long hair, remove chuck key,</i> <i>use correct speed, secure workpiece...</i>		<b>3 marks</b> <b>2 marks</b>																		
13.	Force ...  <i>Compression</i>		<b>5 marks</b>																		
14.	(i) Identify metals ...  <table border="1"> <thead> <tr> <th>Metal</th> <th>Pure Metal</th> <th>Alloy</th> </tr> </thead> <tbody> <tr> <td>Steel</td> <td></td> <td>X</td> </tr> <tr> <td>Copper</td> <td>X</td> <td></td> </tr> <tr> <td>Aluminium</td> <td>X</td> <td></td> </tr> <tr> <td>Brass</td> <td></td> <td>X</td> </tr> <tr> <td>Bronze</td> <td></td> <td>X</td> </tr> </tbody> </table>	Metal	Pure Metal	Alloy	Steel		X	Copper	X		Aluminium	X		Brass		X	Bronze		X		<b>5 x 1 mark</b>
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15.	Sketch of try-square...  <i>Stock (1m for rivets and wearing plate)</i> <i>Blade</i>		<b>3 marks</b> <b>2 marks</b>																		

16.	<table border="1"> <thead> <tr> <th>Plastic</th> <th>Thermoplastic</th> <th>Thermosetting</th> </tr> </thead> <tbody> <tr> <td>Polyvinyl Chloride</td> <td>X</td> <td></td> </tr> <tr> <td>Acrylic</td> <td>X</td> <td></td> </tr> <tr> <td>Polyester Resin</td> <td></td> <td>X</td> </tr> <tr> <td>Urea Formaldehyde</td> <td></td> <td>X</td> </tr> <tr> <td>Polystyrene</td> <td>X</td> <td></td> </tr> </tbody> </table>	Plastic	Thermoplastic	Thermosetting	Polyvinyl Chloride	X		Acrylic	X		Polyester Resin		X	Urea Formaldehyde		X	Polystyrene	X		5 x 1 mark							
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17. (i)	Name the tool ...  <i>G-Cramp</i> <i>Cramp</i>	 <b>3 marks</b> 1 mark																									
(ii)	Use...  <i>Assembly</i> <i>To hold workpiece</i>	<b>2 marks</b>																									
18. (i)	Name of hinge... <i>T-Hinge</i>	 <b>3 marks</b>																									
(ii)	Method to prevent rusting...  <i>Painting</i> <i>Plastic Coating</i> <i>Galvanising</i> <i>Enamelling</i>	<b>2 marks</b>																									
19.	Position of belt ... <i>On bottom pulley</i>	 <b>5 marks</b>																									
20	Completed cutting list ...  <table border="1"> <thead> <tr> <th>DESCRIPTION</th> <th>NUMBER</th> <th>L</th> <th>W</th> <th>T</th> </tr> </thead> <tbody> <tr> <td>Base</td> <td>1</td> <td>290</td> <td>120</td> <td>15</td> </tr> <tr> <td>Back</td> <td>1</td> <td>250</td> <td>180/165</td> <td>15</td> </tr> <tr> <td>Front</td> <td>1</td> <td>250</td> <td>80</td> <td>15</td> </tr> <tr> <td>Sides</td> <td>2</td> <td>70</td> <td>80</td> <td>15</td> </tr> </tbody> </table>	DESCRIPTION	NUMBER	L	W	T	Base	1	290	120	15	Back	1	250	180/165	15	Front	1	250	80	15	Sides	2	70	80	15	 <b>5 x 1 mark</b>
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**Running total of allowed questions for this section to be recorded and shown as indicated at the marking conference.**




QUESTION	ANSWER	MARKS	
2. (i)	<p>Explanation of steps in design process...</p> <p><b>Investigation/Research -</b></p>  <p><i>The process wherein you assess the problem, identify key requirements for the design solution and gather information that will allow you to arrive at possible design solutions. Looking for ideas, studying similar artefacts, identifying key dimensions etc.</i></p> <p><b>Evaluation –</b></p> <p><i>Reviewing of project vis-à-vis fulfilling the given brief. Assessing artefact with respect to function, appearance, proportion, shape, problems encountered, modifications etc.</i></p>	<p>5 marks</p> <p>5 marks</p>	10
(ii)	<p>Design solution for storage of video cassettes and DVDs...</p> <p><i>Basic unit/box without any design features (sketch only)</i></p> <p><i>Fair attempt to accommodate items in an attractive, compact unit. (Must include notes)</i></p> <p><i>Good, well balanced, well sketched design, showing some innovation, must incorporate notes and film theme...</i></p>	<p>8 marks</p> <p>↓</p> <p>13 marks</p> <p>↓</p> <p>16 marks</p>	16
(iii)	<p>Two specific requirements...</p> <p><i>Any two relevant requirements to the design</i>  <i>Access, safety, appearance, function, access, stability, size, shape, proportion....</i></p>	2 x 3 marks	6
(iv)	<p>Suitable material for the manufacture of the unit ...</p> <p><i>Mark for any suitable material (Including manufactured boards)</i></p> <p>Reasons ...</p> <p><i>Reasons appropriate to selected material:</i>  <i>Cost, appearance, workability, durability...</i></p>	<p>2 marks</p> <p>2 x 3 marks</p>	8

QUESTION	ANSWER	MARKS	
3. (i)	<p>Cross section parts...</p> <p><i>A-(Annual) Ring</i> <i>B-(Medullary) Ray</i> <i>C-Bark</i></p> 	<p>3 marks 3 marks 3 marks</p>	9
(ii)	<p>Differences between heartwood and sapwood...</p> <p><i>Heartwood: darker, dead cells, better quality wood more durable, harder, located in centre area supports the tree...</i></p> <p><i>Sapwood: paler in colour, living cells, less durable, softer, located outside heartwood, transports water and minerals...</i></p>	2 x 4 marks	8
(iii)	<p>Photosynthesis...</p> <p><i>Water and carbon dioxide, in the presence of sunlight and chlorophyll, cause a chemical reaction to make glucose and oxygen.</i></p>	7 + 4 marks	11
(iv)	<p>Reasons why rain forests should be conserved ...</p> <p><i>Protection of habitats, reduction of carbon dioxide levels, aesthetics, rare flora/fauna, prevent silting of watercourses ...</i></p> <p>Approaches to the conservation of rain forests ...</p> <p><i>Use of softwoods, replanting of trees cut down, use hardwood veneers not solid timber, ... (accept political/economical answers)</i></p>	<p>2 x 3 marks</p> <p>2 x 3 marks</p>	12
QUESTION	ANSWER	MARKS	
4 (A). (i)	<p>Method of making an identical leg...</p> <ul style="list-style-type: none"> <li><i>Rule and calliper...measuring critical points... mark lines on spindle...use calipers for diameter</i></li> <li><i>Using a profile template check work repeatedly as you proceed...marking out and cutting of profile...applying to workpiece</i></li> <li><i>Use of a contour gauge...setting gauge... applying to spindle</i></li> <li><i>Using a copying lathe...setting up... basic knowledge of copying lathe or copying attachment displayed</i></li> </ul> 	9 + 4 marks	13
(ii)	<p>Two specific woods...</p> <p><i>Name of suitable wood (Pine)</i></p> <p>Reasons...</p> <p><i>Close-grained, takes finish well, free from defects, attractive grain ...</i></p>	<p>2 x 3 marks (1 mark)</p> <p>2 x 3 marks</p>	12





QUESTION	ANSWER	MARKS	
5. (i)	Correct names for the marking out tools ...  <i>A – Tenon saw - cutting joints...</i> <i>B – Coping saw - cutting curves</i> <i>C – Dovetail saw - finer work including dovetails</i>	 3 x 2 marks  3 x 2 marks	12
(ii)	Replacing the blade... <ul style="list-style-type: none"> <li>• <i>Remove the broken blade</i></li> <li>• <i>Turn handle anti-clockwise to reduce gap between retaining pins</i></li> <li>• <i>Fit blade at the toe of the saw ensuring teeth point towards the handle</i></li> <li>• <i>Flex the frame against the bench to locate the other end of the blade</i></li> <li>• <i>Holding its retaining pin tighten the handle to tension the blade</i></li> <li>• <i>Align the retaining pins</i></li> </ul>	6 + 4 marks	
(iii)	Saw Kerf... <ul style="list-style-type: none"> <li>• <i>The groove cut by the blade in the wood</i></li> </ul> Saw Set... <ul style="list-style-type: none"> <li>• <i>Alternate teeth are bent left and right to allow clearance for the blade</i></li> </ul> <i>or</i> <ul style="list-style-type: none"> <li>• <i>Tool used to adjust the saw teeth for proper cutting clearance</i></li> </ul>	4 + 2 marks  4 + 2 marks	12
(iv)	Name of tenon part... <i>Haunch(ing)</i>	3 marks	
	Function... <i>Allows mortice and tenon joint to be used instead of a bridle thus ensuring a stronger joint...prevents twisting/torsion</i>	3 marks	

**Totals for these questions to be recorded as indicated at the marking conference**