Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination 2006

Materials Technology Wood

Higher Level

Marking Scheme

SECTION A

Mark best 16 answers. Disallow marks for any questions/parts of questions in excess of 16 as per instructions to Assistant Examiners

QUESTION		ANSWER	MARKS
1.	(i)	Correct name for the power tool… ***Jigsaw***	**3 marks**
	(ii)	State ONE purpose for which this tool is used…. ***Curved - Angled cuts - Shapes***	**2 marks**
2.	(i)	What is the form of distortion….. ***Cupping***	**3 marks**
	(ii)	What causes a board to distort….. ***Unequal shrinkage in annual rings - Poor seasoning***	**2 marks**
3.	(i)	In the space provided, name the two screw slots…. ***A – Pozidriv*** Philips ***B – Straight Slot***	**1 x 2 marks** 1 mark **1 x 1 mark**
	(ii)	State **ONE** advantage that slot **A** has over slot **B** ***Tip of screwdriver located exactly and less likely to slip*** **Better grip - Does not wear as easily**	**2 marks**
4.		Suggest one method that could be used to prevent jagged edges happening.... • ***Drill from both sides*** • ***Clamp - wood at the back*** Forstner bit/Expansion bit	**5 marks** 2 marks
5.	(i)	Name the manufactured board shown……. ***Plywood - Stoutheart-ply***	**3 marks**
	(ii)	State ONE advantage of this type of board…….. • ***Strength - Available in large sheets*** • ***Uniform thickness - Does not split at the edge*** • ***Durability – Able to bend*** • ***Stable - Cost***	**2 marks**

6.		What is the function of the bast… ***Transport of minerals – New cells produced***	**5 marks**
7.		Name the trees … ***A – Beech*** ***B – Scots pine*** ***C – Sycamore***	**2 x 2 marks** **1 x 1 mark**
8.	(i)	Name the woodworking tool… ***Pincers***	**3 marks**
	(ii)	For what purpose is this tool used… • ***Pulling nails*** • ***Cutting small nails*** • ***Cutting light wire***	**2 marks**
9.		Completed sketch of a haunched Mortise and Tenon… ***Mortise*** ***Tenon***	**3 marks** **2 marks**
10.	(i)	Name the gear mechanism shown… ***Rack and Pinion***	**3 marks**
	(ii)	Name a common woodworking machine that incorporates… • ***Bandsaw*** • ***Mortise Machine*** • ***Pillar Drill*** • ***Router***	**2 marks**
11.		What is the correct meaning of the abbreviation **CAM**… ***C – Computer*** ***A – Aided*** ***M – Manufacture***	**2 x 2 marks** **1 x 1 mark**
12.	(i)	Name of the tool shown in the diagram… • ***Countersink bit*** • ***Rosehead bit***	**3 marks**
	(ii)	For what purpose is this tool used…. • ***Countersinking for screws*** • ***Making screws flush with the surface of wood***	**2 marks**

13.		What is the correct name for the force acting … ***Tension*** Stretch/Pull	**5 marks** 2 marks
14.		Match each item shown with the most appropriate plastic… ***Canoe*** – *Glass Reinforced Plastic* ***Window*** – *Polyvinyl Chloride* ***Gear Wheel*** – *Nylon*	**2 x 2 marks** **1 x 1 mark**
15.	(i)	Name the tool shown in the diagram… ***Scriber***	**3 marks**
	(ii)	State an appropriate use for this tool… ***For marking out lines in metal or plastic***	**2 marks**
16.	(i)	Name the parts of the woodturning lathe… ***A – Tool rest*** ***B – Tailstock - Centre***	**1 x 2 marks** **1 x 1 mark**
	(ii)	State ONE function of the each of the two parts … ***A – Supports the tools while turning a piece of wood*** ***B – To support the end of the work piece***	**2 x 1 marks**
17.	(i)	Suggest a suitable adhesive for applying… • ***Animal Glue*** • ***Impact Adhesive*** • ***Contact Adhesive***	**3 marks**
	(ii)	Give ONE reason for your choice … • ***Non Staining*** • ***Instant grip*** • ***Easy to make changes***	**2 marks**
18.	(i)	Name the fitting… • ***Knockdown*** • ***K D*** • ***Block***	**3 marks**
	(ii)	State one advantage … • ***Easy to use*** • ***Can be dismantled***	**2 marks**

<table>
<tr><td>19. (i)</td><td>Name the plug terminals marked…..

P – Earth
Q – Neutral</td><td>1 x 2 marks
1 x 1 mark</td></tr>
<tr><td>(ii)</td><td>What is the function of the component labelled ….

• Holds the wire in position
• Stops the wire from slipping
• Safety</td><td>2 marks</td></tr>
<tr><td>20.</td><td>Complete the cutting list……..

<table>
<tr><td>DESCRIPTION</td><td>QUANTITY</td><td>L</td><td>W</td><td>T</td></tr>
<tr><td>BASE</td><td>1</td><td>300</td><td>200</td><td>20</td></tr>
<tr><td>SIDES</td><td>2</td><td>170</td><td>150</td><td>20</td></tr>
<tr><td>RAIL</td><td>1</td><td>300</td><td>50</td><td>20</td></tr>
</table>
</td><td>5 x 1 mark</td></tr>
</table>

Running total of allowed questions for this section to be recorded and shown as indicated at marking conference.

SECTION B

Mark best 3 answers. Check <u>all</u> stationary and indicate running total and disallowed marks as indicated at marking conference.

QUESTION	ANSWER	MARKS	
1. (i)	Preparation of working drawing …		
	Elevation -		
	Setting out overall length (800)	**1 marks**	
	Showing overall height (420)	**1 marks**	
	Showing thickness of sides (40)	**2 x 1 mark**	
	Showing position of horizontal rails	**2 x 1 mark**	
	Showing thickness of horizontal rails	**2 x 1 mark**	
	Showing chamfer and quadrant lines	**4 x 1 mark**	**12**
	End Elevation -		
	Setting out/transferring overall height	**1 mark**	
	Setting out to width (500)	**1 mark**	
	Transferring position and thickness of end rails	**4 x 1 mark**	
	Showing position and width of vertical rail	**2 x 1 mark**	
	Quadrants	**2 x 1 mark**	
	Chamfers	**2 x 1 mark**	
	Trench	**1 mark**	**13**
	General -		
	Hidden detail (any lines)	**1 mark**	
	Scale	**1 mark**	
	Dimensions (any 4, any quality)	**4 marks**	
	Draughtsmanship, presentation…	**2 marks**	**8**
	NOTE: 1. If isometric drawing is presented, mark as per scheme and divide by 2. 2. If the wrong scale is used, award no marks for height or width in elevation and deduct scale mark.		
(ii)	Jointing members **P** and **Q**...		
	Mortise and Tenon ***Dowelling*** ***Screws, sunk and plugged/concealed***	**5 + 2 marks**	**7**

QUESTION		ANSWER	MARKS	
2.	(i)	Design steps in the correct order… ***Analysis of Brief*** ***Investigation and Research*** ***Design Ideas/Solution*** ***Sketches/Working Drawings*** ***Evaluation***	**5 x 2 marks**	
		Explanation of two steps….. ***Marks for clarity and exactness in description***	**2 x 2 marks**	**14**
	(ii)	Design solution for television games console…. ***Basic unit/box without any design features (sketch only)*** ***Fair attempt to accommodate items in an attractive, compact unit. (Must include notes)*** ***Good, well balanced, well sketched design, showing some innovation in the storage and display of the items.(Must include notes)***	**8 marks** ↓ **10 marks** ↓ **14 marks**	**14**
	(iii)	State **TWO** specific design requirements… ***Mark for any appropriate design requirement.*** Safety – Appearance - Proportion	**2 x 2 marks**	**4**
	(iv)	Suggest a suitable material… ***Mark for any suitable material (Including manufactured boards)*** Two reasons for your selection… ***Reasons appropriate to selected material***	**4 marks** **2 x 2 marks**	**8**

<table>
<tr><th>QUESTION</th><th>ANSWER</th><th>MARKS</th></tr>
<tr><td>3. (i)</td><td>Name the two methods of seasoning…

A – Natural / Air Seasoning
B – Kiln / Artificial Seasoning / Progressive Kiln Compartment

<table>
<tr><th></th><th>ADVANTAGES</th><th>DISADVANTAGES</th></tr>
<tr><td>Natural / Air seasoning</td><td>Low labour cost
Easy to setup
Easily maintained and managed
No specialised equipment needed</td><td>Very slow
Depends on weather
Prone to attack by fungi and insects
Inaccurate control of moisture content</td></tr>
<tr><td>Kiln / Artificial Seasoning</td><td>Exact moisture content achieved
More control over seasoning
Uniform circulation of air
Quick method</td><td>Expensive to set up
Skilled operator needed
Different drying schedules needed for various species</td></tr>
</table>
</td><td>2 x 4 marks

8 x 1 marks</td><td>16</td></tr>
<tr><td>(ii)</td><td>Explain what is meant by the term ….

The balance of moisture between the atmosphere and the wood</td><td>7 marks</td><td>7</td></tr>
<tr><td>(iii)</td><td>State two reasons for the use of preservatives….

To stop the wood from rotting
Protects from Woodworm
To prevent dry rot
Colour - Appearance

Name two classes of preservative…….

Solvent
Water-borne
Tar oils</td><td>2 x 2 marks

2 x 2 marks</td><td>8</td></tr>
<tr><td>(iv)</td><td>Name three methods of applying preservatives …

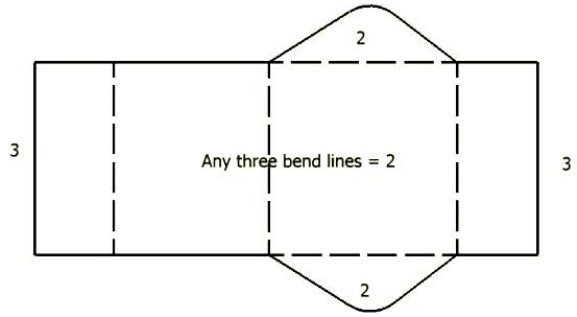
Roller application
Brush
Spray application
Soaking – Dipping - Pressure

One advantage/disadvantage of preservative……

Reasons appropriate to selected method.</td><td>3 x 1 marks

6 x 1 marks</td><td>9</td></tr>
</table>

QUESTION	ANSWER	MARKS	
4 (A). (i)	Steps to prepare wood for a clear applied finish… ***Punch nails*** ***Use a smoothing plane or scraper to remove pencil marks*** ***Fill any holes or imperfections*** ***Sand lightly moving from rough to smooth abrasive paper*** ***Dust down surfaces*** ***Wipe surface with a damp cloth*** ***Cut back with smooth paper when dry*** ***Wipe down with white spirit…***	**12+2 marks**	**14**
(ii)	Selection of appropriate clear finish **…** ***Polyurethane varnish*** ***Cellulose lacquer*** ***Wax*** ***Oil*** ***French Polish*** Two reasons … ***Two appropriate reasons for selected finish…***	**4 marks** **2 x 3 marks**	**10**
(iii)	Steps to follow for the application of chosen finish… ***Working with the grain*** ***Application of first coat*** ***Cutting back when dry*** ***Application of additional coats….***	**6+2 marks**	**8**
(iv)	Two safety precautions that should be observed when using applied finishes… ***Avoid naked flames*** ***Adequate ventilation*** ***Wear protective clothing*** ***Keep away from food……***	**2 x 4 marks**	**8**

QUESTION	ANSWER	MARKS	
4 (B). (i)	Development of mobile phone holder… ***Neat well proportioned sketch of development showing correct cutting pattern and fold lines***  		**12**
(ii)	Cut out and form the holder…… ***Shape holder and cut out using scroll saw or hacksaw*** ***Edges filed to the lines and finished by draw filing and use of carbon-silicate paper*** ***Fold line marked with non-permanent pen*** ***Fold line placed over strip heater and when softened bent to correct angle using a former***	**6+4 marks**	**10**
(iii)	Steps to bore the hole …. ***Mark hole centre with centre punch*** ***Place acrylic in vice, supported with timber under the hole position*** ***Drill through using an appropriate drill bit with a low speed and slow feed rate***	**6+2 marks**	**8**
(iv)	Suitable design for a wooden base… ***Basic design without any features*** ***Attempt to make the base attractive with one of the items*** ***Well sketched design with two of the items***	**3 marks** ↓ **5 marks** ↓ **10 marks**	**10**

QUESTION		ANSWER	MARKS	
5.	(i)	State the correct names for tools labelled … ***L – Bevel Edge Chisel / Paring Chisel*** ***M – Turning Gouge*** ***N – Mortise Chisel / Firmer Chisel***	 **5 marks** **5 marks** **5 marks**	**15**
	(ii)	What is the correct angle A for the cutting edge of a chisel when resharpening it … ***30*/35 Degrees**	 **5 marks**	**5**
	(iii)	How to resharpen a chisel that has a badly damaged cutting edge… ***Using an oil or water cooled grindstone, grind the cutting surface back at an angle of 25 degrees until chips are removed.*** ***On a flat oilstone, raise the bevel of the chisel to a 30/35 degree angle*** ***Move the chisel in a figure of eight over the oilstone to hone the cutting edge*** ***Remove the burr formed, either back-hone the blade by placing it flat on the stone or using a leather strop***	 **6 + 4 marks**	**10**
	(iv)	Steps you would follow to cut out the trench shown… ***Saw the trench down to the gauge lines (3 Cuts)*** ***Using a chisel chop away the waste starting at one edge and working up towards the middle*** ***Turn piece around and repeat the same from the other side (Left with triangle in the middle)*** ***Level off the waste*** ***Check for flatness***	 **6 + 4 marks**	**10**