Coimisiún na Scrúduithe Stáit
State Examinations Commission

JUNIOR CERTIFICATE 2008

MARKING SCHEME

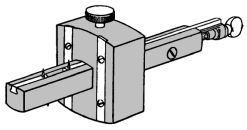
MATERIALS TECHNOLOGY WOOD

HIGHER LEVEL

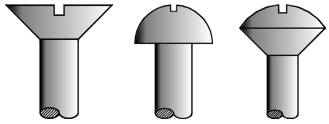
SECTION A

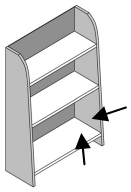
Mark for best 16 answers. Disallow marks for any questions/parts of questions in excess of 16 as per instructions to Assistant Examiners

<table>
<tr><th>QUESTION</th><th>ANSWER</th><th>MARKS</th></tr>
<tr><td>1. (i)</td><td>Correct name for the tool...

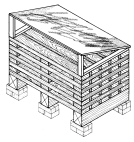
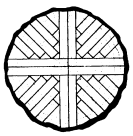
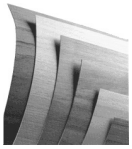
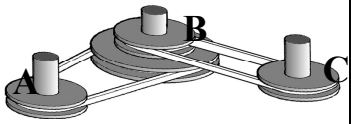
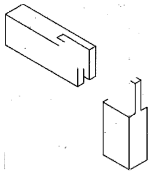
Mortice Gauge
  </td><td>3 marks</td></tr>
<tr><td>(ii)</td><td>Specific use for this tool

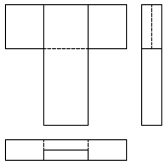
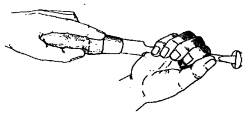
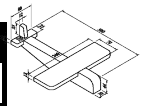
To mark two lines parallel to the edge of a piece of timber. Marking joints</td><td>2 marks</td></tr>
<tr><td>2.</td><td>Any two head types shown …

Countersunk
Round head
Raised head
  </td><td>1 x 3 marks
1 x 2 marks</td></tr>
<tr><td>3.</td><td>Suitable sketch of …

Housed, Mortice and Tenon
Dowelled, Concealed screws
KD Fitting, Domino
Biscuit Joint….
  </td><td>5 marks</td></tr>
<tr><td>4.</td><td>Two advantages of using cordless drills …

Safer (electric shock, no flexes….)
Usable away from electric source
  </td><td>1 x 3 marks
1 x 2 marks</td></tr>
<tr><td>5.</td><td>Design Process stages
<table><tr><th>Stage</th><th>Order (1-5)</th></tr><tr><td>Sketches/Working Drawings</td><td>4</td></tr><tr><td>Evaluation</td><td>5</td></tr><tr><td>Design Ideas/Solutions</td><td>3</td></tr><tr><td>Investigation and Research</td><td>2</td></tr><tr><td>Analysis of Brief</td><td>1</td></tr></table></td><td>5 x 1marks</td></tr>
<tr><td>6.</td><td>C.A.M…
Computer
Aided
Manufacture  </td><td>2 x 2 marks
1 x 1 mark</td></tr>
<tr><td>7</td><td>Three common Irish trees …
 
Sycamore
 
Oak
 
Ash</td><td>2 x 2 marks
1 x 1 mark</td></tr>
</table>

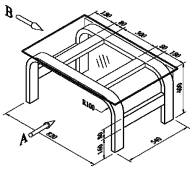
8.	(i)	Name of seasoning method …  ***Natural/Air Seasoning***	**3 marks**
	(ii)	One disadvantage of this seasoning… ***Slow, weather dependent, no control over MC boards prone to insect/fungi attack …***	**2 marks**
9.		Two conditions for dry rot … ***Warmth, Moisture, Oxygen, Food, No Ventilation***	**3 marks** **2 marks**
10.	(i)	Conversion method …  ***Radial ,Quarter, Rift Sawing***	**3 marks**
	(ii)	Feature… ***Silver Grain, Silver fleck, Quarter grain, Fiddleback***	**2 marks**
11.	(i)	Adhesive for veneers…  ***Casein, PVA, Formaldehydes*** ***Scotch glue (animal or pearl glue)*** ***Rubber –based (contact or impact adhesive)***	**1 x 3 marks**
	(ii)	Reason… ***Instant bond, strong, suitable for timber…***	**1 x 2 marks**
12.		Two safety precautions using a chisel …  ***Secure workpiece, sharp chisel,*** ***hands behind cutting edge…***	**1 x 3 marks** **1 x 2 marks**
13.	(i)	Direction of pulley..  ***Clockwise***	**3 marks**
	(ii)	Speed of pulley C … ***90rpm***	**2 marks**
14.	(i)	Two reasons to apply finish…  ***Protect, enhance, toughen…***	**3 marks** **2 marks**
15.	(i)	Bridle Joint…  ***Tenon*** ***Cheeks***	**3 marks** **2 marks**

16.	Alloys of brass… • ***Copper*** • ***Zinc*** 	**1 x 3 marks** **1 x 2 marks**
17.	Completed sketch of Tee Halving Joint … ***Trench part*** ***Tenon part*** 	**3 marks** **2 marks**
18.	Force being applied to screw … ***Torsion*** 	**5 marks**
19. (i)	Machine name… ***Bandsaw***	**3 marks**
(ii)	Two safety precautions to observe when using a bandsaw … • ***Wear eye protection*** • ***Adjust blade guard to appropriate height*** • ***Tie up long hair*** • ***Remove jewelry*** • ***Keep work area clear*** • ***Isolate before adjusting…*** 	**2 x 1 marks**
20	Completed cutting list …  **Description** | **Qty** | **Length** | **Width** | **Thickness** Body | 1 | ***300*** | 44 | 30 Wing | 1 | ***240*** | 70 | ***12*** Tail | 1 | 80 | ***25*** | 12 Fin | ***1*** | 35 | 20 | 12	**5 x 1 mark**

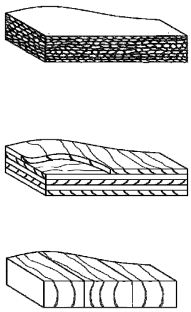
Running total of allowed questions for this section to be recorded and shown as indicated at the marking conference.

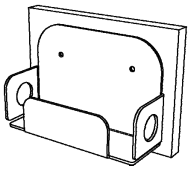
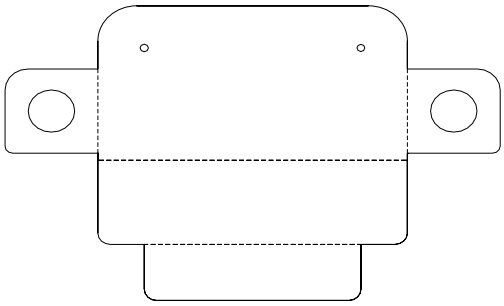
SECTION B

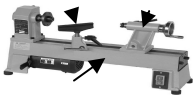
Mark for best 3 answers. Check <u>all</u> stationary and indicate running total and disallowed marks as indicated at the marking conference.

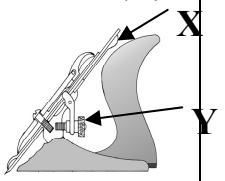
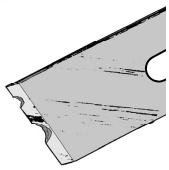
QUESTION	ANSWER	MARKS	
1. (i)	Preparation of working drawing …		
	**Elevation -**		
	Setting out overall width (820)	**2 marks**	
	Showing overall height (400)	**2 marks**	
	Showing thickness of legs (32)	**2 x 1 mark**	
	Showing thickness of top of laminate (32)	**2 marks**	
	Finding the centre and drawing the curves at the top of legs (R100)	**2 x 2 mark**	**12**
	End view -		
	Setting out/transferring overall height	**2 marks**	
	Setting out to width (540)	**2 marks**	
	Showing leg widths (80)	**2 x 1 mark**	
	Showing position and width of end rails	**2 x 1 mark**	
	Showing position and thickness of top rails	**2 x 1 mark**	**10**
	General -		
	Hidden detail (any 4 lines)	**2 marks**	
	Scale	**2 mark**	
	Dimensions (any 4, any quality)	**4 marks**	
	Draughtsmanship, presentation…	**3 marks**	**11**
	NOTE: 1. If isometric drawing presented, mark as per scheme and divide by 2 at end 2. If the wrong scale is used, no marks for height or width in elevation and loss of scale mark **3.** If sketched, mark as per scheme		
(ii)	Jointing the rail R to leg L ...		
	Mortice and tenon, ***Halving,*** ***Bridle,*** ***Dowelling*** ***Domino*** ***Biscuits*** ***Pocket/concealed screws***	**5 + 2 marks**	**7**
	Name only	2 marks	

QUESTION	ANSWER	MARKS	
2. (i)	Explanation of steps in design process… **Sketches/Working Drawings -** ***Dimensioned drawings and sketches to include plan, elevation and end elevation and/or a pictorial view of the proposed artefact. Appropriate detailing and a materials list should be included.*** **Evaluation –** ***Review of project in relation to the given brief. Assessing of artefact with respect to function, appearance, proportion, shape, safety, problems encountered, modifications etc.***	**5 marks** **5 marks**	**10**
(ii)	Design solution for storage of household items **...** ***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, must incorporate notes***	**5 marks** ↓ **10 marks** ↓ **15 marks**	**15**
(iii)	Two specific requirements … ***Any two relevant requirements to the design. Access, safety, appearance, function, cost, stability, size, shape, proportion, ease of use...***	**2 x 3 marks**	**6**
(iv)	Suitable material for the manufacture of the unit … ***Mark for any suitable material (Including manufactured boards)*** Reasons … ***Reasons appropriate to selected material: Appearance, cost, durability, workability...***	**3 marks** **2 x 3 marks**	**9**

QUESTION	ANSWER	MARKS	
3. (i)	Names of manufactured boards… ***A- Chipboard/Particle/Oriented Strand Board*** ***B- Plywood/Multiply*** ***C- Laminated Board/Lamwood/Pineboard***	**5 marks** **5 marks** **5 marks**	**15**
(ii) 	Advantages of manufactured boards **...** • ***Relatively cheap*** • ***Help to conserve solid wood*** • ***Stable*** • ***Available in wide boards*** • ***Smooth uniform finish*** • ***Available in a range of surface finishes*** • ***Uniform thickness***	**4 x 2 marks**	**8**
(iii)	Manufacture of board … Chipboard… • ***Wood is processed into particles*** • ***Mixed with a synthetic adhesive*** • ***Spread out and compressed under heat*** • ***Dried sanded and cut to size*** • ***(OSB: strands are aligned in two outer layers with an inner core positioned at right angles)*** Plywood... • ***Veneers cut from log*** • ***Odd number layers arranged at 90° to each other*** • ***Adhesive applied and layers compressed*** • ***Boards sanded and cut to size*** Lamwood… • ***Strips of solid wood planed to size*** • ***Glue is applied*** • ***Strips pressed together*** • ***Boards are sanded and cut to size***	**9 + 3 marks**	**12**
(iv)	Use of manufactured boards to reduce global deforestation … • ***Providing an alternative to solid wood*** • ***By using wood from managed forests, thinnings and waste/recycled timber.*** • ***By using veneers to give the effect of real wood*** • ***Manufactured boards use mostly softwoods***	**5 marks**	**5**

QUESTION	ANSWER	MARKS	
4 (A). (i)	Development of letter holder…   ***Surfaces (5)*** ***Fold lines (2/4)*** ***Fillets(4/9)*** ***Quality of drawing***	**5 x 2 marks** **2 marks** **2 marks** **2 marks**	**16**
(ii)	Drilling two small holes... • ***Mark centres for two holes*** • ***Secure acrylic in vice or cramp*** • ***Place waste wood beneath acrylic / Place tape on front and back of acrylic*** • ***Using a twist bit set drill to low speed*** • ***Drill through slowly***	**8+3marks**	**11**
(iii)	Drilling two large holes... • ***Marks centres for holes*** • ***Secure acrylic in vice or cramp*** • ***Place waste wood beneath acrylic / Place tape on front and back of acrylic*** • ***Using a hole saw set drill to low speed*** • ***Drill through slowly (from each side)*** ***Or*** • ***Find centres and draw circles on acrylic*** • ***Drill series of holes inside the circumference with waste wood beneath*** • ***File acrylic to line with (half)round file*** ***Or*** • ***Find centres and draw circles on acrylic*** • ***Drill hole on circumference with waste wood beneath*** • ***Insert scroll saw, fretsaw blade through hole*** • ***Holding acrylic securely and saw to the line*** • ***Finish with appropriate file***	**8 + 3 marks**	**11**
(iv)	Design to improve back… ***Name/sketch of appropriate enhancement*** ***e.g. chamfer, moulding, rounding corners...***	**2 marks**	**2**

QUESTION	ANSWER	MARKS	
4 (B). (i) 	Parts of lathe… ***A. Toolrest:*** ***supports tools while turning workpiece*** ***B. Tailstock:*** ***supports end of workpiece*** ***C. Bed:*** ***main body of lathe onto which tailstock, toolrest and headstock etc. are fixed***	**3 x 3 marks** **3 x 2 marks**	**15**
(ii) 	Forming hole in lamp **...** • ***Secure lamp on lathe with hollow/cone centre in tailstock*** • ***Pass a long hole-boring bar/auger through the tailstock*** • ***Bore the hole halfway through the wood, withdrawing hole-boring bar/auger frequently to clean parings*** • ***Reverse the piece and repeat process***	**8+4 marks**	**12**
(iii)	Appropriate turning speed ... **400rpm**	**4 marks**	**4**
(iv)	Safety precautions… • ***Wear face protection*** • ***Tie up long hair*** • ***Fix loose clothing*** • ***Remove jewellery*** • ***Do not adjust while lathe is in motion*** • ***Rotate workpiece before starting lathe*** • ***Select appropriate speed*** • ***Ensure workpiece is secure*** • ***Hold turning tool firmly in both hands*** • ***Remove toolrest when sanding*** • ***Be familiar with controls*** • ***Make sure workpiece is properly prepared and free from defects which may cause injury*** • ***Keep work area clean and tidy*** • ***Keep cutting tools on toolrest while working***	**3 x 3marks**	**9**

QUESTION	ANSWER	MARKS	
5. (i)	Correct names for planes … ***A – Jack Plane*** ***B – Block/Palm Plane*** ***C – Smoothing Plane***	**3 x 5 marks**	**15**
(ii)   	Appropriate use of **...** ***Jack Plane: squares up rough timber to the correct size. Planes uneven surfaces straight and true*** ***Block Plane: used for light planing, chamfering, and for planing endgrain*** ***Smoothing Plane: used for chamfering and to smooth and clean surfaces in preparation for sanding.***	**2 x 4 marks**	**8**
(iii) 	Parts of plane… ***X – (Lateral adjusting) lever*** ***Allows blade to be moved from side to side*** ***Y – Depth adjusting wheel/nut*** ***Enables blade to be raised and lowered***	**2 x 2marks** **2 x 1marks**	**6**
(iv) 	Resharpening plane iron… • ***Remove plane irons from plane*** • ***Unscrew blade from cap iron*** • ***Hold plane iron on oil/water cooled grindstone at 25°-30° and grind until gaps are removed*** • ***Sharpen the cutting iron on a sharpening stone, using oil as a lubricant , at an angle of 30°-35°*** • ***Remove burr/wire edge*** • ***Replace iron in plane***	**8 + 3 marks**	**11**