




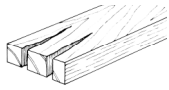

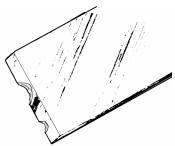

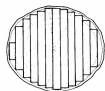

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State Examinations Commission

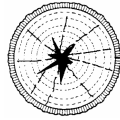
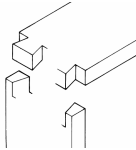

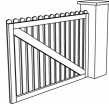
Junior Certificate Examination 2007


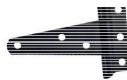
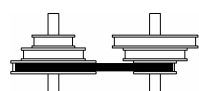
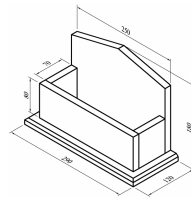
Materials Technology Wood
Higher Level
Marking Scheme

SECTION A

Mark for best 16 answers.

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

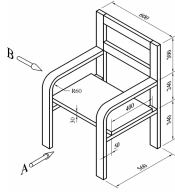
| 8. | Letters ... <i>W-Water/Weather</i> <i>B-Boil</i> <i>P-Proof</i> | | 2 x 2 marks 1 x 1 mark | | | | | | | | | | | | | | | | | | |
|-----------|---|---|---|-------|-------|--|---|--------|---|--|-----------|---|--|-------|--|---|--------|--|---|--|-------------------|
| 9. | Two advantages of CAD ... <i>Accuracy</i> <i>Easily edited/modified</i> <i>Easily stored</i> <i>Faster</i> | | 3 marks 2 marks | | | | | | | | | | | | | | | | | | |
| 10. | (i) Timber defect... <i>Star Shake</i> <i>Shake</i> |  | 3 marks 1 mark | | | | | | | | | | | | | | | | | | |
| | (ii) Cause ... <i>Felling</i> | | 2 marks | | | | | | | | | | | | | | | | | | |
| 11. | Completed sketch of box dovetail ... <i>Dovetails</i> <i>Pins</i> |  | 3 marks 2 marks | | | | | | | | | | | | | | | | | | |
| 12. | Pillar drill safety precautions ... <i>Wear goggles, tie up long hair, remove chuck key,</i> <i>use correct speed, secure workpiece...</i> |  | 3 marks 2 marks | | | | | | | | | | | | | | | | | | |
| 13. | Force ... <i>Compression</i> |  | 5 marks | | | | | | | | | | | | | | | | | | |
| 14. | (i) Identify metals ... <table border="1" data-bbox="528 1379 1254 1619"> <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 | | 5 x 1 mark |
| Metal | Pure Metal | Alloy | | | | | | | | | | | | | | | | | | | |
| Steel | | X | | | | | | | | | | | | | | | | | | | |
| Copper | X | | | | | | | | | | | | | | | | | | | | |
| Aluminium | X | | | | | | | | | | | | | | | | | | | | |
| Brass | | X | | | | | | | | | | | | | | | | | | | |
| Bronze | | X | | | | | | | | | | | | | | | | | | | |
| 15. | Sketch of try-square... <i>Stock (1m for rivets and wearing plate)</i> <i>Blade</i> | | 3 marks 2 marks | | | | | | | | | | | | | | | | | | |


| 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 | | | | | | | |
|--------------------|---|--|---------------|---------------|--------------------|---|------|---------|-----|-----|-----------------|------|---|-------------------|---------|----|-------------|---|-----|------------|----|-------|---|----|----|----|---|
| Plastic | Thermoplastic | Thermosetting | | | | | | | | | | | | | | | | | | | | | | | | | |
| Polyvinyl Chloride | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acrylic | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Polyester Resin | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| Urea Formaldehyde | | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| Polystyrene | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17. (i) | Name the tool ... <i>G-Cramp</i> <i>Cramp</i> |  3 marks 1 mark | | | | | | | | | | | | | | | | | | | | | | | | | |
| (ii) | Use... <i>Assembly</i> <i>To hold workpiece</i> | 2 marks | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18. (i) | Name of hinge... <i>T-Hinge</i> |  3 marks | | | | | | | | | | | | | | | | | | | | | | | | | |
| (ii) | Method to prevent rusting... <i>Painting</i> <i>Plastic Coating</i> <i>Galvanising</i> <i>Enamelling</i> | 2 marks | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19. | Position of belt ... <i>On bottom pulley</i> |  5 marks | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 |  5 x 1 mark |
| 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 | | | | | | | | | | | | | | | | | | | | | | | |

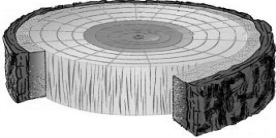

Running total of allowed questions for this section to be recorded and shown as indicated at the marking conference.


SECTION B

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

| QUESTION | ANSWER | MARKS |
|----------|---|--|
| 1. (i) | <p>Preparation of working drawing ...</p> <p>Elevation -</p> <p style="text-align: right;"><i>Setting out overall width (600)</i> <i>Showing overall height (880)</i> <i>Showing width of sides (70)</i> <i>Showing position of seat and back rails</i> <i>Showing width of back rails</i> <i>Showing thickness of seat</i></p>  <p>End view -</p> <p style="text-align: right;"><i>Setting out/transferring overall height</i> <i>Setting out overall width (560)</i> <i>Showing leg thicknesses (30)</i> <i>Transferring position and thickness of rail</i> <i>Showing width and thickness of seat</i> <i>Transferring position and thickness of arm</i> <i>Finding the centre and drawing the curves to the top rail</i></p> <p>General -</p> <p style="text-align: right;"><i>Hidden detail (any two lines)</i> <i>Scale</i> <i>Dimensions (any 2)</i> <i>Draughtsmanship, presentation...</i></p> <p>NOTE:</p> <ol style="list-style-type: none"> 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 | <p style="text-align: right;">1 marks 1 marks 2 x 1 mark 3 x 1 mark 2 x 1 mark 1 mark</p> <p style="text-align: right;">10</p> <p style="text-align: right;">1 mark 1 mark 2 x 1 mark 2 x 1 mark 2 x 1 mark 2 x 1 mark 3 x 1 mark</p> <p style="text-align: right;">13</p> <p style="text-align: right;">2 x 1 mark 2 marks 2 x 1 mark 4 marks</p> <p style="text-align: right;">10</p> |
| (ii) | <p>Jointing of rail G to leg H ...</p> <p style="text-align: right;"><i>Mortice and tenon</i> <i>Corner/Mitre Bridle</i> <i>Corner Dovetail</i> <i>Dowelling/Biscuits</i> <i>Screws, sunk and plugged/concealed</i> Name only</p> | <p style="text-align: right;">5 + 2 marks 2 marks</p> <p style="text-align: right;">7</p> |

| QUESTION | ANSWER | MARKS | |
|----------|---|--|----|
| 2. (i) | <p>Explanation of steps in design process...</p> <p>Investigation/Research -</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>Evaluation –</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> | <p>2 x 3 marks</p> | 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"> <i>Rule and calliper...measuring critical points... mark lines on spindle...use calipers for diameter</i> <i>Using a profile template check work repeatedly as you proceed...marking out and cutting of profile...applying to workpiece</i> <i>Use of a contour gauge...setting gauge... applying to spindle</i> <i>Using a copying lathe...setting up... basic knowledge of copying lathe or copying attachment displayed</i>  | 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) | <p>Correct names for the marking out tools ...</p> <p><i>A – Tenon saw - cutting joints...</i></p> <p><i>B – Coping saw - cutting curves</i></p> <p><i>C – Dovetail saw - finer work including dovetails</i></p>  | <p>3 x 2 marks</p> <p>3 x 2 marks</p> |
| (ii) | <p>Replacing the blade...</p> <ul style="list-style-type: none"> • <i>Remove the broken blade</i> • <i>Turn handle anti-clockwise to reduce gap between retaining pins</i> • <i>Fit blade at the toe of the saw ensuring teeth point towards the handle</i> • <i>Flex the frame against the bench to locate the other end of the blade</i> • <i>Holding its retaining pin tighten the handle to tension the blade</i> • <i>Align the retaining pins</i> | <p>6 + 4 marks</p> |
| (iii) | <p>Saw Kerf...</p> <ul style="list-style-type: none"> • <i>The groove cut by the blade in the wood</i> <p>Saw Set...</p> <ul style="list-style-type: none"> • <i>Alternate teeth are bent left and right to allow clearance for the blade</i> <p>or</p> <ul style="list-style-type: none"> • <i>Tool used to adjust the saw teeth for proper cutting clearance</i> | <p>4 + 2 marks</p> <p>4 + 2 marks</p> |
| (iv) | <p>Name of tenon part...</p> <p><i>Haunch(ing)</i></p> <p>Function...</p> <p><i>Allows mortice and tenon joint to be used instead of a bridle thus ensuring a stronger joint...prevents twisting/torsion</i></p> | <p>3 marks</p> <p>3 marks</p> |

12

10

12

6

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