

In Raim Gidovachatz & Golsachtu
DEPARTMENT OF EDUCATION & SCIENCE



EXCELLENCE IN EDUCATION

JUNIOR CERTIFICATE 2001
MATERIALS TECHNOLOGY (WOOD)
HIGHER LEVEL
MARKING SCHEME

CONFIDENTIAL

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

- 1 (i) Correct name for the gauge

Marking Gauge.



3 marks

- (ii) Material manufactured from

Close grained hardwood—Beech or rosewood.

2 marks

- 2 Function of the part of the tree labelled X

Protect the inner parts of the tree, prevent drying out

Bark (named only)



5 marks

2 marks

- 3 (i) Manufactured board shown *Plywood*

3 marks

- (ii) Properties

Strength in two directions, durability, flexibility

2 marks

- 4 (i) Fitting



Knockdown

3 marks

Block

2 marks

- (ii) Use *manufacture of cupboard carcasses from man-made boards, flat pack furniture, joining shelves*

2 marks

- 5 (i) Method of Seasoning *Air seasoning, natural seasoning*



3 marks


- (ii) Disadvantages *boards prone to attack by fungi/insects, difficult to achieve required MC, imprecise, slow*


2 marks


- 6 M D F ... *Medium Density Fibreboard*

1 x 3 marks


2 x 1 mark


7 Stage at which wood boring beetles do most damage to timber 
Larva or Adult (accept either) **5 marks**

8 (i) Wood defect 
Cupping **3 marks**
 (ii) Cause
*Unequal shrinkage in annual rings, mainly in slash
 sawn timber, poor seasoning* **2 marks**

9 Steps in painting 
Filling
Priming
Sanding
Undercoat
Finish Coat **5 x 1 mark**

10 Thermoplastics/Thermosetting
Polyethylene Thermoplastic
Nylon Thermoplastic
Polyester Thermosetting **1 x 2 marks**
Acrylic Thermoplastic **3 x 1 mark**

11 (i) Metalworking tool 
Scriber **3 marks**
 (ii) Purpose
For marking out cut lines on plastics and metals **2 marks**

12 Defect in the stool 
Legs are too thin and spindly for the purpose intended... **5 marks**

13 (i) Direction of rotation *Anti-clockwise*

3 marks



(ii) Rotational speed of V *720 RPM*

2 marks

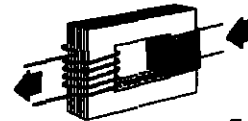
14 Brass is an alloy of

Copper
and *Zinc*

3 marks

2 marks

15 Component shown for reducing voltages



Transformer.

5 marks

16 (i) Suitable adhesive for veneering
Animal Glue, contact/impact adhesive



3 marks

(ii) Reason for choice

*Non-staining, thermoplastic, easy to make changes, (animal glue)
good instant grip (contact/impact)*

2 marks

17 Force being applied by screwdriver

Torque or torsion
Rotational/twisting force

5 marks

2 marks

18 Suitable joint for dressing table drawer corner

Dovetail, housing, finger or stopped dowel joint
(sketch must depict the joint type clearly)

3 marks

Quality of sketching

2 marks

19 (i)

TERMINAL	NAME
A	Earth
B	Neutral



1 x 2 mark
1 x 1 marks

(ii) Function of X

To protect the appliance by providing a weak link that will melt if too much current begins flowing into the appliance

2 marks

Fuse

1 mark

20 Name two of the trees

- (i) *Scots Pine*
- (ii) *Sycamore*
- (iii) *Beech*

1 x 3 marks
1 x 2 marks

Running total of allowed questions for this section to be recorded 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 1

(i) Preparation of working drawing

Elevation -

<i>Setting out overall length</i>	2 marks
<i>Showing Height 760 (left)</i>	1 mark
<i>Showing Height 500 (right)</i>	1 mark
<i>Showing thickness of end frames (70)</i>	2 x 1 marks
<i>Showing bottom edge of rail</i>	2 marks
<i>Showing top edge of rail</i>	2 marks

10 marks

End view -

<i>Setting out/transferring overall height (760) and width (900)</i>	2 marks
<i>Showing height at foot of bed (500)</i>	1 mark
<i>Showing rails on head of bed</i>	2 x 2 marks
<i>Showing rail at foot of bed (300)</i>	2 marks
<i>Points on curve (any two)</i>	2 x 1 mark
<i>Drawing of curve</i>	1 marks

12 marks

General -

<i>Hidden detail (any 4 lines)</i>	4 marks
<i>Draughtsmanship, including scale</i>	4 marks
<i>Dimensions</i>	2 marks

10 marks

(ii) Jointing rail R to leg L

<i>Mortise and tenon joint</i>	6 + 2 marks
<i>Bridle joint</i>	
<i>Halving or housing joint</i>	
<i>Dowelling</i>	

Named only	4 marks
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8 marks

Total 40

Question 2

(i) Identification of three key design requirements relating to the units design



Safety
Cost
Durability

Hygiene
Accessibility
Appearance ...

3 x 3 marks

9 marks

(ii) Design solution for storage of first-aid items ...

Allow for originality in design

Basic box or book case designed
Fair attempt to accommodate items in a safe, accessible unit
Good, well balanced, well sketched design, showing some innovation

4 marks

↓
6 marks

↓
10 marks

Description of how points at (i) have been dealt with in proposed design

Mark for a reasonable description of how the design contributes to the achievement of the points raised above.

3 x 3 marks

19 marks

(iii) Means whereby shelves can be made height adjustable

Mark for two methods of achieving adjustment.
To gain full marks sketches must be neat, well proportioned and clearly illustrate the method being proposed.

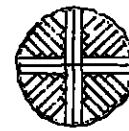
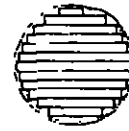
Each method

4 + 2 marks

12 marks

Total 40

Question 3



(i) Identify the two methods of conversion shown

- A - *Slash/Through & Through/Plain sawing***
- B - *Radial/Quarter sawing***

2 x 6 marks

12 marks

(ii) Two advantages and two disadvantages of each method

	ADVANTAGES	DISADVANTAGES
Slash Sawing	Fast Very little log handling required Very little waste	Boards tend to cup A lot of sapwood in planks Unattractive grain patterns
Quarter Sawing	Hard-wearing boards Attractive grain Stable boards	A lot of log handling required More waste

8 x 2 marks

16 marks

(iii) Treatment and prevention of dry rot

Removal of all affected timber plus 600 mm of apparently sound

Burn removed timber

Treat adjacent timbers with preservative (fungicide)

Treat any walls, etc. in contact with timber

Flame concrete surfaces with gas lamp

Replace removed timber with pressure treated new timber ...

Address the cause of the infection/dampness,

i.e. leaking pipes, roof, gutters, etc.

Provide for good cross ventilation

Periodically check and reapply preservative ...

6 x 2 marks

12 marks

Question 4 (A)



(i) Preparation of wood for clear applied finish

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 very smooth paper when dry
Wipe down with white spirit ...

4 x 3 marks

12 marks

(ii) Selection of suitable finish

Polyurethane varnish
Cellulose lacquer
Wax
Oil

4 marks

Two appropriate reasons for the finish selected

2 x 3 marks

10 marks

(iii) Application of finish

Working with the grain
Application of first coat
cutting back when dry
Application of additional coats ...

8 + 2 marks

10 marks

(iv) Safety precautions to be observed when using oil-based finishes

Avoid naked flames
Adequate ventilation
Wear protective clothing
Keep away from food ...

2 x 4 marks

8 marks

Total 40

Question 4 (B)



(i) Parts of the lathe

- A - Tailstock
- B - Bed
- C - Tool rest
- D - Faceplate

4 x 4 marks

16 marks

(ii) Preparation and mounting of timber in the lathe for spindle turning

Draw the diagonals on the ends of the piece to locate the centres

Draw the largest possible circle on the ends using these centres

Draw tangents to the circles to create an octagon on the end

Plane the corners of the piece until it's octagonal in shape

Using a mallet, drive the drive centre into one end of the piece ...

4 + 2 marks

Replace the centre in the headstock and locate the piece on the mark already made

Move the tailstock along the bed so that the tail centre is almost touching the end of the piece

Tighten the tailstock in place and wind the tail centre into the end of the piece so that the piece is held securely

Locate and tighten the tool rest so that it is close to, but not touching, the piece ...

4 + 2 marks

12 marks

(iii) Four safety precautions to be observed when using the lathe

No loose clothing or jewellery

Tie up long hair

Use appropriate speeds (Small-fast, large-slow)

Make sure work piece is secured properly in the lathe before commencing work

One person at lathe at a time

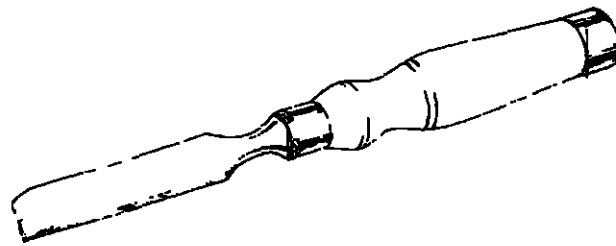
Keep floor area clean and tidy ...

4 x 3 marks

12 marks

Question 5

(i) Correct name of chisel



Mortise chisel

4 marks

4 marks

(ii) Re-sharpening chisel

***Use 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 degree angle
Move the chisel in a figure of eight pattern over the oilstone to hone the cutting edge
To remove the burr formed, either back-hone the blade by placing it flat on the stone or use a leather strop ...***

12 + 4 marks

16 marks

(iii) Two safety precautions to be observed when using chisels

***Keep both hands on chisel
Keep hands behind the chisels cutting edge
Always work away from yourself
When carrying chisels do so with them held loosely, pointing towards the ground
Replace protective caps when not in use ...***

2 x 5 marks

10 marks

(iv) Metal ring R

Ferrule

2 marks

To prevent the chisel handle splitting when hit heavily and repeatedly with a mallet or hammer

8 marks

10 marks

Total 40