



*Confidential*

**MARK SCHEME**

**{6902/03}**

**MARKS: 50**

## Section A

**1. Three safety precautions**

Award 1 mark for each identified safety precaution

- Work clamped, apron worn, fingers behind work
  - Goggles/eye shield, hair tied back
- 3x1 [3]

**2. Process: Polypropylene - Injection moulding** [1]

**3. Award 1 mark for each correct given adhesive**

Processes	Adhesive
Gluing plastic laminate to a manufactured board table top	Contact Adhesive
Gluing wooden classroom stool	Synthetic resin, PVA
Gluing metal parts together	Epoxy resin (not super glue)

[3]

**4. Joining methods: Welding, Brazing, Threading** 2x1 [2]

**5. Sheet metal shown between folding bars** 1

Folding bars shown in vice 1

Use of mallet or hammer and scrap wood 1 [3]

**6. Operation A: Facing off** 1

Operation B: Parting off 1 [2]

**7. Type of solder used: soft solder** [1]

**8. Copper becomes work hardened so, annealing will soften the metal**

Allowing the metal to be shaped

Any appropriate answer award 2 marks [2]

9.

Product	Manufacturing Process	Specific Plastic
Sandwich container	Vacuum forming	Polythene, Polysterene
Electrical plug	Injection moulding	Urea formaldehyde

[4]

10. (a) (i) Hardwearing, insulates from heat, easy to clean

[1]

(ii) Will not corrode, attractive metal

[1]

(b) Method 1: Use of epoxy resin

[1]

Method 2: Use of rivets

[1]

[25]

## Section B

11. (a) Award 1 mark for each area of research identified:

Available resources/materials, relevant sizes of cassette tapes (slots),

Location/environment, costs, existing products 3x1 [3]

(b) Easy to work/make plastic products, awkward shapes can

be easily/quickly made, available in different colours, self-finish 2x1 [2]

(c) (i) Shown slot 1

Shown cassette thickness (17) 1 [2]

(ii) Appropriate tools stated 1

Appropriate sketch/ sketches shown 1

Logical sequence of process 2 [4]

(iii) Wearing of safety goggles when drilling

Use of scrap wood for holding and supporting the plastic 2x1 [1]

(d) Sheet heated by means of oven/strip heater 1

Use of former to bend around 1

Appropriate former shown 1

Retaining method while cooling 1 [4]

(e) (i) Rack shown shaped and made from specific named board 0 - 2

(Award 1 mark for naming specific material)

Appropriate design 0 - 2

(Award 1 mark for poor design)

Appropriate method/s of construction 0 - 2

(Award 1 mark for naming appropriate method) [6]

(ii) Some plastics are not recyclable, plastics are not biodegradable,

Plastics give off poisonous fumes during manufacture.

Award 1 mark for each relevant point given [3]

**[25]**

12. Award 1 mark for any two of the following:

(a) Hardwearing, close grained, attractive, tough, durable. 2x1 [2]

Award 1 mark for any two of the following:

(b) Lightweight, easily bent to shape, corrosion resistant, self-finished 2x1 [2]

(c) Polyurethane/varnish, white/French polish, variety of oils and preservatives  
wax, lacquer [1]

(d) (i) Tenon saw (Not curve cutting saws) [1]

(ii) Sketch must show:

Use of <b>G</b> clamp	1	
Use of scrap wood	1	
Added notes	1	
<b>Or</b>		
Bench hook	1	
Held in vice	1	
Added notes	1	[3]
Award 1 mark if shown in vice		

(e) (i) Sanding method shown 1  
Table or platform with wood positioned 1  
Added notes to show correct shape of the back and operation 1 [3]

(ii) Jack plane shown 1  
Vice shown 1  
Method: 1  
Plane across to middle and stop/repeat from other end  
**Or**  
Use of scrap wood allows to plane across end

**Or**  
Use of shooting board [3]

(f) (i) Method of securing one end of rod 1  
Method of forming 30 mm radius: use of former 0 - 2  
Method of force: hammer 1  
Use of vice award maximum 2 marks [4]

(ii) Appropriate bracket shown 1  
Named material 1  
Screws shown 1  
Appropriate sketch and notes 0 – 3 [6]

[25]

13. (a) Properties: relatively cheap, durable, easy to shape, high tensile strength, malleable, easy to work with, tough, strong enough to hold tools [2]
- (b) 2 pieces of information: type of tools to be stored, how many, sizes of tools, weight of tools. [2]
- (c) Cut out shape (radiused ends not necessary) 1  
Hole positions (centres marked or holes drawn) 1 [2]
- (d) (i) Centre punch provides location for drill, drill will not slip, prevents distorted hole, accurate, hole is drilled accurately [1]  
(ii) 2 safety precautions: clamp work piece down, scrap material underneath, correct speed, remove chuck key, drill secure, guard in position.  
Accept references to personal safety: goggles, hair tied back, jewellery removed [2]
- (e) 2 reasons: Faster to manufacture, repetitive accuracy, avoids individual marking and measuring, easier to mark out [2]
- (f) (i) Cutting the mild steel: steel held in vice or hand or clamped 1  
cut with tin snips or cold chisel sketched 0 – 2  
limited use of shears/hacksaw 1 mark only  
references to CAM must be supported with detailed accurate information 1 [4]  
(ii) Bending the mild steel: sketch showing steel held in a vice 1  
Being shaped around a former/round rod 1  
Hit with a wooden mallet/hammer and scrap wood 1  
Accuracy of named tools 1 [4]
- (g) (i) 2 reasons: protect the material, improve appearance, cover scratches. [2]  
(ii) Preparing for painting: accept reference to file/filing, wire brush, steel wool wet and dry, clean and degrease metal, medium and fine grade of emery cloth, support/set up work for painting [2]
- (h) Sketch of round head screw 1  
Named round head screw 1  
**Do not accept** raised head screw [2]
- [25]