This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners’ meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2016 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.
Section A

1 (a) Smoothing: not jack

(b) Grain shown either horizontal or emerging from right to left. Do not accept an arrow. Grain must be drawn on wood.

2 3 specification points. The desk tidy must: store a variety of items, be attractive, allow for easy access of items, be stable, fit specific location, easy to move, compact, easy to clean
Accept any other valid points

3 Carbon steel

4 Award 0–3 dependent upon accuracy of sketch

5 (a) Polystyrene, polypropylene

(b) (i) Keeps food hot 1
(ii) Can produce litter, cannot be recycled, does not decompose 1 [2]

6 (a) Mortise

(b) Thick handle, squarer/stronger blade, [leather] washer/shock absorber Handle with ferrule to withstand blows from matter. 2 × 1 [2]

7 3 ergonomic features: buttons easy to see, comfortable/rounded shape in hand, appropriate size to fit in hand, colour coded buttons for ease of operation, rubber buttons for better selection.

8 Award 0–2 dependent upon accuracy of sketch

9 (a) Steam bending, laminating

(b) Fewer joints to construct, sturdier construction, attractive curved appearance, less waste, stronger must be qualified
Section B

11  (a)  (i)  Redwood, pine, parana pine, whitewood, fir  
(ii)  Manufactured board: hardboard, plywood, MDF  
     Suitable thickness: 4.6 or 9mm standard thickness  

(b)  (i)  2 benefits: ready-made, available from D-I-Y centres, professional finish,  
     variety of materials, range of sizes  
[2]  
(ii)  Award 1 mark for correct position in the cabinet and 1 mark for brief description  
     of how it would be fitted.  
     Handle: attached to either left or right side of vertical rail [stile] of door using  
     screws and/or glue.  
[2]  
     Butt hinge: attached to any part of the door frame using screws.  
[2]  
     Magnetic catch: 2 parts attached to side opposite butt hinge using screws.  
[2]  
     Wall plate: screwed to the back of the cabinet then screwed to the wall.  
[2]  

(c)  Suitable permanent joint, butt pinned and glued, half lap, dovetail, finger [comb]  
     joint, dowel named  
     Award 0–3 dependent upon accuracy of sketch  
[4]  

(d)  Use of pegs or pins or pre-manufactured studs  
     3 different positions  
     Technical accuracy: materials, spacing, sizes  
[3]  

(e)  (i)  Suitable join: dowel, mortise and tenon, corner halving, corner bridle named  
(ii)  Use of rebate, groove or applied beads  
     Method of production  
     Correct size/proportion  
[3]  

(f)  Benefit: lighter weight, see-through is convenient, could be cheaper  
[1]
12 (a) (i) Mild steel: stronger, less likely to bend, cheaper, durable
OR
Aluminium: lighter, does not corrode, needs to finish

(ii) Some form of insert/bush/sleeve/plate
Materials named. Not rubber.

(b) (i) Epoxy resin mixed in equal quantity with hardener
Epoxy resin applied to both parts and held while resin sets

(ii) Add hot water to granules of polymorph to soften them
Remove from water and wrap it around the metal rod
Mould to shape of hand grip

(c) (i) Use of grub screw, pin, rivet
Technical accuracy of sketch and added notes

(ii) 4 stages:
Granules fed into hopper
Plastic granules heated to liquid form
Forced by screw into injector
Injected into mould
Accept any valid intermediary stages given by candidates

(iii) Cost of tooling is very expensive to produce
Large quantities are needed to recover the costs

(d) [Sand] casting

(e) Scoring system must meet spec points:
Use of rods/sliding counters, flip cards or similar to show score
Fixed to cabinet
Record maximum 5 goals scored
Materials and fittings used

13 (a) (i) 2 benefits: quicker, more accurate, easier to mark out on paper/card and transfer, can be used as a model, wastes less material

(ii) When large quantities are to be marked out a paper or card template would not last.
Therefore a resistant material that would stand up to wear is required.

(b) (i) Self-finished means no applied finish
The material can be cleaned and buffed to a high quality
(ii)* Aluminium
Cut out using combination of:
Abra file aw, tinships, junior hacksaw 0–2
Edges smooth using files and emery cloth 0–2
Tools and equipment named 0–1 [5]

*OR

Acrylic
Cut out using coping, Hegner, scroll, band, tenon saw 0–2
Edges smooth using files and wet and dry paper 0–2
Tools and equipment named 0–1 [5]

(c) (i) Bending acrylic:
strip heater/line bender 1
use of former 1
method of retention 1 [3]

(ii) Bending aluminium:
use of folding bars, vice and scrap wood 1
use of former 1
method of force: mallet or hammer and scrap wood 1 [3]

(d) Countersink head screws remove thickness from the material making it too thin. 1
Round head screws make no impact on thickness of material and support the material. 1 [2]

(e) The hardwood shelf can expand and contract depending on room temperature and humidity and therefore must have allowance for movement. 1
No allowance for movement is provided when glued, therefore there is a danger that the hardwood will split. 1 [2]

(f) Modifications include: recessed or housed slot in shelf or additional folds to a modified bracket
Security front to back 1
Security vertically up and down 1
Technical accuracy/added notes 0–2 [4]