

## Candidate 4

ENTER NUMBER OF QUESTION		DO NOT WRITE IN THIS MARGIN
1a)	ABS is used for the footrests	
	as it is durable material that is	
	scratch resistant. It is also strong	
	therefore it can hold a lot of weight.	
	Tubular mild steel is used as the	
	frame due to it being a lightweight	
	material that makes it easier to	
	transport. It also has a great weight	
	to strength ratio. It is also cost	
	effective as it is a low costing	
	material.	
	Stainless steel is used on the	
	paralympic wheelchair as it is very	
	strong being 3x the strength of	
	normal steel. It is also easy to	
	clean due to the smooth finish.	
	Stainless steel is also corrosion	

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	resistant.	
	Nylon is used for the paralympic	
	wheelchair wheels as it is a	
	self lubricating material that is	
	resistant to abrasion and easy	
	to clean and maintain.	
	Tubular aluminium frame is extremely	
	lightweight yet still very strong. It is also	
	a non-corrod metal which does not	
	corrode and therefore is perfect for	
	an agile, <del>lightweight</del> lightweight chair.	
	b) Extrusion could be used for the	
	mild steel frame as it maintains	
	its cross section and has a	
	constant wall thickness. This means	
	there is no weak spots in the design. <del>marks</del>	

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piercing and blanking could be used to create the holes needed for the connection of parts as it is an accurate way of creating holes.

Injection moulding could be used for the wheels or other small parts as it is a <sup>good</sup> ~~precise~~ way of manufacturing parts due to its repeatability and precision, and provides intricate detail.

sewing/stitching could be used for the nylon seat as it is a material that is resistant to abrasion, it is very durable and can be cleaned easily due to its chemical resistance. and

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c)	The collapsible wheelchair has
	been punched to suit general
	users. The wheelchair is collapsible
	and therefore it is easy for public
	to store in their house and
	use when needed.
	The wheelchair has padded arm
	rests for comfort <del>and</del> where
	everyday use is a factor therefore
	comfort <del>more</del> <del>the</del> <del>is</del> <del>needed</del>
	factor is needed.
	The paralympic wheelchair is designed
	for sport therefore it has many
	factors influenced by this. These
	factors include no arm rests.
	This is to minimize possibly the
	weight of the wheelchair so be

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user feels more nimble and	
can turn faster within a sporting	
game:	
The paralympic wheelchair also has	
bumpers in order to protect the	
user from collisions.	
The paralympic wheelchair also	
has a much more robust	
design with the wheels fully	
covered and the sides protected,	
this is to enhance the protection	
of the user and increase safety.	
The paralympic chair also has	
a more aerodynamic design where	
there is wings to not increase the	
speed. The covered wheels also add	

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	to this.
	The sport chair has smaller front wheels
	to aid the fast paced turning which
	makes it easier to turn due to a
	smaller surface area and smaller wheel
	to turn. This adds to the sporting needs of it.
	d) The benefits of using standard
	components is that the chair can
	be easily fixed if damaged as
	the parts are internationally available.
	The production of the chair would
	also be much faster as there
	is less parts needed to make.
	Also, if there is a specific part
	needed made, this means that more



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The size of the armrests must be able to hold the biggest arm.

The size of the footrests must fit the size of the biggest shoe size.

The width of the gap between the part used to spin the wheel and the actual wheel must be big enough for a hand to fit in between in order to turn the wheel.

The physiological side of the wheelchair is that the wheel must be easy to reach and must be easy to spin.

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	The sports wheelchair must
	allow the user to sit at the
	correct posture to maximise
	comfort.
	It also must be easy to
	operate with ease of turning
	the wheel and turning left or
	right.
	The collapsible wheelchair also must
	be easy adjust the footrests with
	the buttons being easy to push.
	The wheelchair must be easy to get
	into. <del>with</del>

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2a)	Vacuum forming is suitable because
	it is a repeatable process done
	with speed.
	it can easily produce containers
	with intricate and detailed designs.
	it is also a cheap way of
	doing packaging.
	It is an easy production method therefore
	no special worker is needed to do
	it so it cuts costs of employment.
b)	Melamine formaldehyde is a thermoplastic
	that can be used for food
	production as it can be re-used
	therefore it can be used again
	once chucked away from buyers

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	for food, with no need for special disposal.	
	It is also chemical resistant and can be cleaned easily.	
	it is a cheap plastic and is widely available therefore it is so sustainable, this is also due to its recyclability.	
* got a decent	Melamine formaldehyde is also <sup>*</sup> heat resistant and can be used to pack warm goods as well.	
	c) The <del>environment</del> environment would influence the production system as global warming is a huge factor which needs to stop. Production machines can harm the environment and therefore this may make the selection	

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	of a production system change.
	Cost also may change the production system as some machines are very expensive where others are cheap and easy to run.
	The difficulty may also influence this as if a machine is too hard, a more specialised worker would be needed to use do the job. This increases cost.
3a)	CAD software is good because it gives the manufacturer a realistic design that is cheap to do and can be edited therefore there is no waste of material.
	CAD files can also be shared and therefore the 3D graphic can

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	be sent to the client within
	seconds to check if they are
	happy with the design. This also
	reduces cost as nothing needs
	to be sent in the post or
	transported to them.
	You can also use standard components so its
	just as in production and making the product.
b)	<del>answer</del> A strong brand image
	allows a company to have loyal
	customers who will <del>buy</del> buy products
	based on past experiences.
	It ensures quality of a product
	if a brand has a good
	reputation.
	It acts as self promotion and



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d)	<p>stage A is when the product is first made and used. This is when the product is at its best quality where it will sound and perform the best. Stage B is where the product is still working well but will get small issues of quality may occur or begin to occur. Stage C is when the issues start to become a problem and cause possibly the buyer to complain. This is when the product is past its prime and may need replaced. Stage D is when the product begins to deteriorate and may stop working. Sound may be lost in one side or the wire may have a tear where it connects to the phone or computer. This is when a</p>

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	hyer would replace the product.
4c)	The texture of the gillette razor is all smooth except from the grips on the neck of the handle. This creates a contrast in texture, and gives
	The rounded corners of the razor gives a jutunshi effect which is created by shape.
	The brand name 'gillette' is engraved onto the top part beside the razor blades. This difference in texture makes the logo stand out.
	The gillette logo at the bottom



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work. It is also very easy to edit a CAD model and therefore it can advance the design.

A 3D model made by clay, cardboard or plastic could be made to show how the model would look in person, in size and mechanisms; how it would operate. This advances the design as it shows how the model will work and look when finished and allows changes to be made as it is a cheap way of doing this.

3a) Product design specification involves instructions such as what the design must include, this being possibly a

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certain type of texture or colour. This also involves how a product would move, ~~work~~ and operate. This also includes possibly a overall graphic of what the item must look like.

A technical specification is how the product would be made. This involves what materials and how many parts would be needed:

b) Surveys could be used to find out what the target market would want.

Focus groups could be used

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	<p>which are groups of people who are usually the target market who answer questions of the manufacturer in a controlled environment to gain information of what is wanted.</p>
	<p>User trials could also be used as they give information on how the product works for a real member of the public.</p>
c)	<p>Manufacturers could use recycled materials to reduce the making of new materials.</p>
	<p>They could also make their products lighter or easier to stack so it would reduce the amount of journeys a vehicle would need to transport them.</p>

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They could also begin production a nearer the place of sale to lower the amount of travel between shops.

~~Finally~~ They could also use materials that are recyclable and that come from a sustainable source to cut down on waste of limited material.

Finally, they could use plastic or material logos to make the recycling process easier.

(c) Material logos and numbers could be used to tell what a material is.

Material ingredients could be put on the back to say what its made of.

2:45 - Symbols could also be used to



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7 <small>Cont. inved.</small>	CAD graphics could be used nearer	
	the end of a design in order	
	to get an opinion on the product	
	from the buyer/client. This would be	
	done to ensure they are happy with	
	the design in order to achieve maximum	
	promise that their full opinion before	
	production starts.	
	An initial ideam graphic could also	
	be used to give the client a	
	path of what line he would want	
	to go down and what idea	
	suited his requirements the most.	
	Advertisements is the final graphic	
	that would take place once the	
	final design is packaged and	
	on the shelves. This is to	

