Candidate 2

ENTER NUMBER OF QUESTION

1a

Sony ICF C1 alarm clock radio.

Outer casing

The outer casing was injection moulded.
This is a suitable manufacturing process, as it provides high detail and can be used to manufacture complex components, which is ideal for the casing.
Injection moulding was identifiable through the split lines present on the component, its very complex form, draft angles, and high surface detail (shapes and text embossed on to the surface.)

Screen

The screen of the Sony ICF-C1 was laser cut.
Laser cutting was a suitable manufacturing process, as it cuts from sheet plastic accurately, and is relatively fast compared to other processes.
Laser cutting was identifiable through the simple but accurate shape of the screen, but also due to the accuracy of the edges.

Screws

The screws used to secure the outer casing were die cast. This was a suitable manufacturing process, as it allowed the threads of the screws to be accurately formed, which is vital to the screws function.
Die casting was identifiable through the high detail of the screw, smooth finish on flat surfaces, and small size.

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b) The alarm clock heavily used plastics as a core material in the product. These plastics were recyclable, however adhesives that joined different plastics together would make it extremely difficult to recycle. This results in more waste in landfills, and negatively affects the environment through microplastics and toxicity. The adhesives also prevent repair or replacement of one component by itself, resulting in many components needing to be removed to access one. This also encourages a linear product life cycle, and adds to waste yet again.

Many components are present in the alarm clock radio. This means seperating the components for recycling the easy is a time consuming and difficult, increasing wastage.

Many sections of the alarm clock were most likely manufactured through automated manufacture. While this processes units faster, more accurately, and cheaper than a human workforce, it can lead to population migration, as low skill factory workers may lose their jobs. This could result in small business in the local area collapsing.
Despite this, screws and snap fittings were used. This makes the low skill workforce employable at some stages of production line, creating jobs for the community.

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c) Drop test

The drop test was used on the Sony to evaluate durability. The alarm clock if placed on a bedside table is prone to being knocked off or dropped, so the alarm clock was dropped from about waist height.

This resulted in no exterior or interior damage, means that the alarm clock was durable and could withstand impacts.

Questionnaire

The questionnaire was used to test the aesthetics of the alarm clock. This questionnaire consisted of a small range of questions regarding the aesthetics of the clock. After surveying a group of people, the averages to the questions were taken.

It was concluded that the aesthetics of the alarm clocks were somewhat popular with the public.

It was also identified that most people preferred the black option to the white one.

User trial

A user trial was conducted to research the ease of use of the alarm clock. A group of people were set tasks to operate the alarm, change the time, change radio station ect.

It was concluded that due to the small, repeated patterns of buttons with small symbols, the alarm clock radio was extremely difficult to use.

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Safety check

We completed a safety check to ensure the alarm clock radio did not overheat.

The alarm clock was left turned on and plugged into a socket overnight, and the temperature was recorded the morning after. No temperature change was found, concluding the alarm clock was safe.

d) The Sony ICF-C1 was mass manufactured, as this production process ~~was~~ results in a high output of units, with lower cost per unit than other production systems.

JIT would have also been suitable to reduce wastage of the production of the product.

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3a) The brief must be clear to ensure the designer creates something the client actually wants, instead of misinterpretation. If time is spend on creating a product the client does not need / time and money is wasted.

By not understanding the target markets wants and safety requirements, an unsafe product could be developed which no one will buy.

b) Temperature resistance

All the materials would need to be resistant to high heats, as they will be exposed to fire. If the material melts, the air pocket will no longer function.

Water resistance

Sprinklers may be activated in case of a fire, so the air pockets will need to be water resistant to materials survive them.

Durability

The air pocket is likely to be thrown into a building, meaning that the materials, especially the outer casing will need to be impact resistant to survive the landing.

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Weight

The ~~product~~ air pocket must be light enough to carry and throw through high windows, otherwise safe usage of the air pocket would be hindered.

c) Sponsorship events

A work or business event regarding fire safety may be present. B sponsors the event, advertisements are made to the relevant people in the target market who are attending the event.

Online advertising

The target market could be reached by advertising on websites popular with fire safety professionals, like online shops for fire station. The target market is then reached, without ~~unnecessary~~ unneeded advertising in different areas.

4a) Mood boards

Mood boards can be effective at generating ideas, as this provides an amalgamation of relevant products, objects and shapes. However they can also be difficult to interpret and time consuming to make. For example, ideas/creatures and books could be put together for the Monotin.

Biomimicry

Biomimicry can benefit idea generation through creating intricate designs, functionally and aesthetically. It can also limit ideas however ~~the designer can only~~ ~~duplicate the~~ For example, the monotin has drawn inspiration from the fins of dolphins and fish, however the designer may struggle to develop the monotin further.

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Scraffitti

Scraffitti can be beneficial, as any form or shape can be created, bypassing design blocks. This however may result in irrelevant or impractical designs. The designs may not make sense, or may be too random, as for the monster, random shapes may impact the aerodynamics of the product.

Morphological analysis

Morphological analysis is beneficial for idea generation, as it can always provide new design ideas for different factors and options of products. However for more innovative and unique products i.e the monster, difficulty in finding factors to ~~does~~ input into the tables may be challenging, as ~~no~~ products like it are ~~not~~ on the market.

b) Injection moulding

- Allows complex components and detail to be printed accurately. The surface of the shoe may not be ~~able~~ to achieved through other manufacturing processes. The legs also may need to be accurate and have a low tolerance, which injection moulds could provide.
- Injection moulding has a high repeat ability to an accurate standard. This means many units of the monster can be produced with little defection and wastage.

Two shot injection moulding

- Allows two different materials to be moulded as the same component. The blue elastomer and pink poly propylene has been two shot injection moulded to integrate the two materials.
- It also allows complex components such that require two sections of mould to be completed, such as the hollow shoe [illegible]

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c) Inspection of raw materials

Inspection of raw materials could be completed. This would ensure no defects are comes onto production line which reduces cost and waste. This could be of standard components the manufacturer uses, or the polypropylene/elastomer if own. *

Updated training of relevant staff

By ensure relevant staff have up to date and thorough training, quality assurance is made efficient and high quality. This means staff are less likely to miss defects, preserving safety of the manufacturer.

Using specialist equipment

By investing in specialist equipment, defects are less likely to be released into the market.

Safety testing

By testing the manufacturer at the end of the production, they could ensure that the manufacturer is safe for consumers to use. These tests could include checking the strap fastens, the elastomer/polypropylene is durable enough, and the bond in the fin does not wear down quickly.

* Damage to the elastomer or polypropylene could result in a product that would impact the its defected manufacturer safety.

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5a) Tech push

- The recent developments of 3D printing technology could result in the 3D printed outsole. This may have been a component impossible to make before, or that 3D printing technology has gotten more advanced it can print it more accurately than before.
- The development of new materials could lead to new components that give the user more comfort or better performance than older shoes. For example, the sole of the shoe may be made springs, helping to reduce impact on landing.

Market Pull

- As environmental issues become more relevant in the modern day, consumers will be more inclined to buy ecofriendly products.
- By finding a gap in the market such as an ecofriendly basketball shoe, the designer can dominate that part of the market.
- Modular and customizable shoes are not yet present in today's market, so by creating shoes that people customise, a range of styles can be created, and therefore a range of people will be interested in buying the shoe.

b) 3D printing is suitable for different levels of production, from mass manufacture to one off production.

3D printing is linked to CAD models, that can be ~~tested~~ stress analysed. By the suitable materials can then be chosen for the other parts of the shoe.

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Restrictions in mould design become obsolete, as there is no mould used. This means draft angles are no longer needed.

Intricate details/symbols can be present on the design, as 3D printing can create highly complex shapes. This can also print with sustainable materials, such as materials derived from sugar cane, resulting in the shoe becoming more sustainable.

c) Product recalls may happen and effect a delay or the product comes to market. This could be particularly damaging to a products reputation, and if no need to be removed or altered in other ways.

Delays in arrival of raw materials may occur. This may be particularly damaging if JIT production is used, as no stock would be able to be made. This would delay sales and production, having a financial cost.

Lack of advertising may result in the product not being known about to many of the target market. This reduces the products visibility, takes longer for popularity to grow. This results in sales being low for a longer period of time.

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d)

Lack of research into target market

This issue may result in the designer creating a product that the target market does not want. The product will force the users to change their routine, so it must be desirable. To prevent this issue, a focus on market research can be created.

Legislation and safety issues

By creating a product that is new and innovative, regulations and safety standards may not exist. It is imperative that the product is still safe, or it will have the potential to be dangerous to users and risk brand image. Therefore testing the product's safety is essential before market release.

User enthusiasm

By creating a product that changes a users routine significantly, they may have negative feelings towards the change. Therefore, if a product pushes the user too far out of their comfort zone, it could become unwanted. To avoid this issue, as a basic product changing the users routine could be made, with updates and extra later releases to gradually allow users to acclimatise to the change.

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Advanced Tech

Radical design is often as a cause of new advancements in technology. If the technology is too difficult to understand or requires high skill to operate, it may be unpopular with the market.

6a) Physiology

- The pedal resistance would have been influenced the design of 'The-O'. It would have to resist enough to provide a functional workout, however smooth enough to be relaxing.
- The weight of ~~the~~ 'The-O' would have to be considered as it may be moved around into environment. It must be light enough to be easily moved from one place to another.

Physcology

- ~~As~~ White and chrome colour scheme may have been influenced by physcology. The white and chrome gives the impression 'The-O' is modern and clean, making it more attractive.
- Symbols in setting resistance level may be encorporated into the design. This would make the use of use more effective.

b) - The proportion of the ~~[illegible]~~ pedal spinner may have ~~been~~ sacrificed performance for aesthetics, as range of motion is significantly less than other pedal bikes, however the ~~[illegible]~~ is aesthetically pleasing compared to the larger frame.

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- The distance between the seat and pedals may have sacrificed aesthetics with ergonomics, as the user may not find the distance too small to comfortably push the pedals. Adjustable seat height would have had an effect on aesthetics, so was not included.
- Ergonomics ~~would have been~~, and comfort would have been sacrificed for aesthetics, as the 'O' does not have a backrest. Although this looks cleaner and less bulky, it makes the 'O' less comfortable.
- Performance may have been sacrificed for ergonomics, as the seat may be too long to easily position feet on the pedals, despite this being a more comfortable option.

c) - The position of split line need to be considered to ensure effective and successful die casting.

- The shrinkage of corners also needs to be considered, as shrinkage of the corners as the mould can occur.
- Draft undo need to be considered for ease extraction of the component from the mould.