



GCE A LEVEL MARKING SCHEME

SUMMER 2024

**A LEVEL
DESIGN AND TECHNOLOGY - UNIT 3
ENGINEERING DESIGN
1601U30-1**

About this marking scheme

The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

This marking scheme reflects the criteria by which this assessment was marked in a live series and was finalised following detailed discussion at an examiners' conference. A team of qualified examiners were trained specifically in the application of this marking scheme. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners. It may not be possible, or appropriate, to capture every variation that a candidate may present in their responses within this marking scheme. However, during the training conference, examiners were guided in using their professional judgement to credit alternative valid responses as instructed by the document, and through reviewing exemplar responses.

Without the benefit of participation in the examiners' conference, teachers, learners and other users, may have different views on certain matters of detail or interpretation. Therefore, it is strongly recommended that this marking scheme is used alongside other guidance, such as published exemplar materials or Guidance for Teaching. This marking scheme is final and will not be changed, unless in the event that a clear error is identified, as it reflects the criteria used to assess candidate responses during the live series.

Guidance for examiners

Positive marking

It should be remembered that learners are writing under examination conditions and credit should be given for what the learner writes, rather than adopting the approach of penalising him/her for any omissions. It should be possible for a very good response to achieve full marks and a very poor one to achieve zero marks. Marks should not be deducted for a less than perfect answer if it satisfies the criteria of the mark scheme.

For questions that are objective or points-based the mark scheme should be applied precisely. Marks should be awarded as indicated and no further subdivision made.

Banded mark schemes

For band marked questions mark schemes are in two parts, the indicative content and the assessment grid.

The indicative content suggests the range of issues which may be included in the learner's answers. It can be used to assess the quality of the learner's response. Indicative content is **not** intended to be exhaustive, and learners **do not** have to include all the indicative content to reach the highest level of the mark scheme.

In order to reach the highest levels of the mark scheme a learner need not cover all of the points mentioned in the indicative content but must meet the requirements of the highest mark band. Where a response is not creditworthy, that it contains nothing of any significance to the mark scheme, or where no response has been provided, no marks should be awarded.

In Design and Technology, each question addresses one assessment objective: either AO3 or AO4. The assessment grid sub-divides the total mark to allocate for a question. These are shown in bands in the mark scheme. For each question, descriptors will indicate the different skills and qualities at the appropriate level.

Examiners should first read and place a tick in the learner's answer/s to indicate the evidence that is being assessed in that question; the mark scheme can then be applied. This is done as a two-stage process.

Stage 1 – Deciding on the band

Beginning at the lowest band, examiners should look at the learner's answer and check whether it matches the descriptors for that band. If the descriptors at the lowest band are satisfied, examiners should move up to the next band and repeat this process for each band until the descriptors match the answer.

If an answer covers different aspects of different bands within the mark scheme, a 'best fit' approach should be adopted to decide on the band and then the learner's response should be used to decide on the mark within the band. For instance, if a response is mainly in band 2 but with a limited amount of band 3 content, the answer would be placed in band 2, but the mark awarded would be close to the top of band 2 as a result of the band 3 content.

Examiners should not seek to mark learners down as a result of small omissions in minor areas of an answer.

Stage 2 – Deciding on the mark

During standardising (marking conference), detailed advice from the Principal Examiner on the qualities of each mark band will be given. Examiners will then receive examples of answers in each mark band that have been awarded a mark by the Principal Examiner. Examiners should mark the examples and compare their marks with those of the Principal Examiner.

When marking, examiners can use these examples to decide whether a learner's response is of a superior, inferior or comparable standard to the example. Examiners are reminded of the need to revisit the answer as they apply the mark scheme in order to confirm that the band and the mark allocated is appropriate to the response provided.

GCE A LEVEL DESIGN AND TECHNOLOGY

UNIT 3 – ENGINEERING DESIGN

SUMMER 2024 MARK SCHEME

Question 1		AO3	AO4	Mark
Study the image of a food processor, shown below.				
(a)	Generate a detailed and measurable specification point under each of the headings below, that would have been required when designing the food processor.		✓	4x2
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response It must blend foods to make soups / smoothies			1
	More detailed response It must rotate the blade very quickly to blend the different food items into a liquid for soups / smoothies. Guidance: Other specification points covering different criteria may still be worthy of up to 2 marks. Function The jug / container must hold enough food items / liquid items to produce appropriate volume juice / smoothie / soup. There must be a sealed thread to easily connect the blade / base to the jug / container so there are no spillages at high speed. Aesthetics The container must be transparent to provide visibility of the contents for filling / once blended. Colour scheme using greys for neutral finish fitting most kitchen environments. Matching dark grey lid / cap / handle / base showing where the user interacts with the product. Portability The food processor must come with different sized containers / suitable for being taken away e.g. at work, outdoors, to gym etc. The parts must be easy to separate for storage / cleaning / moving / transporting from one place to another. Safety The user's hands must not be able to come into contact with the rotating blade. The lid and container must fit together tightly to avoid danger when blender rotates but must still be easy to open / close by hand. The power lead must be long enough to reach sockets from standard worktops, but not too long for trip hazard. Use of food safe polymers / dishwasher safe materials to ensure longevity and no contamination during use.			2
		Total		8

Question 2

The pet door shown below features an electronic control system which is paired with either an existing microchip inserted under household pet's skin, or with a supplied microchip that can be attached to the pet's collar.		AO3	AO4	Mark
(a) (i)	Describe how push-pull market forces would have been used by the designer of the pet door.		✓	4
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response. Market Pull -The target market wants a pet flap to let animals in and out. And Technology Push – The microchip will recognise the homeowner's pet.			1
	More detailed response. Market Pull – The target market will have indicated through research that they require pet flaps in their doors to allow pet to enter and leave their property when required. And Technology Push – The ability for the microchip to be able to be 'paired' and recognise the pet door shows advancement in technological capability.			2
	Guidance: A balanced response is required that includes pull and push forces.			2
(ii)	Explain how the pet door can be considered innovative.		✓	4
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response. The pet can come and go when the homeowner is not home. Or Can let pets out without opening the main door.			1
	More detailed response. The ability for the microchip to recognise the homeowner's pet means that only that pet and no others can gain access providing increased security.			2
	A detailed response. The pet can come and go when the homeowner is not home, as the property door does not need to be opened or closed. The ability for the microchip to recognise the homeowner's pet means that only that pet and no others can gain access providing increased security.			3
	A clear and fully detailed response. The pet can come and go when the homeowner is not home, as the property door does not need to be opened or closed. This could provide increased insulation as well as freedom / flexibility for working pet owners. The ability for the microchip to recognise the homeowner's pet / pets means that only those pets and no others can gain access providing increased security and ensuring no access to the property.			4

(b)	Following the production of the final prototype of the pet door, the designer applies for a Patent. Explain the meaning of a Patent and how this relates to the design of the pet door.		✓	4
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response. A Patent will give the designer some protection Or A Patent will stop an aspect of the design being copied.			1
	More detailed response A Patent will provide protection for the locking mechanism and stop it being copied by someone else.			2
	A clear and detailed response. A Patent legally prevents anyone from copying, making, using, selling, offering for sale, or importing the patented invention for the term of the patent, which is usually 20 years from the filing date subject to the payment of maintenance fees.			3
	A clear and fully detailed response. A Patent is an intellectual property right that legally prevents anyone from copying, making, using, selling, offering for sale, or importing the patented invention for the term of the patent, which is usually 20 years from the filing date subject to the payment of maintenance fees. This will provide protection for the designer, and like any other property right, it may be sold, licensed, mortgaged, assigned or transferred, given away, or simply abandoned. Guidance: Candidates need to include the features of a Patent and how this protects the pet door design for the designer. Recall of Patent is not enough to score more than 2 marks.			4
Total				12

Question 3

The mechanical storage device shown below is fixed to a ceiling and uses a pulley system to hoist bicycles and other household items, for safe storage.		AO3	AO4	Mark
(a)	Explain how the storage device provides mechanical advantage when lifting items.		✓	4
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response. The pulley makes it easier to lift the objects. Or The MA is 4 because there are 4 strings / cords attaching the 2 pulley wheels			1
	More detailed response. The two pulleys provide mechanical advantage meaning that the load e.g. 100 N can be lifted with a quarter of the load's force i.e. 25N Or Less effort is needed to lift the items as forces are distributed across the pulleys.			2
	A detailed response: The two pulleys provide a Mechanical advantage or MA of 4, which means a quarter of the LOAD's force is required to move the LOAD which makes it easier to lift.			3
	A fully detailed response: The two pulleys provide a Mechanical advantage or MA of 4, which means a quarter the LOAD's force is required to move the LOAD which makes it easier to lift. However, four times as much rope will need to be pulled in when compared with the distance the load moves.			4
(ii)	Explain the properties of a specific named material that make it suitable for the rope.		✓	3
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response. Note – there must be a suitable named material. Accept any appropriate or suitable material. Nylon is a tough material to withstand the forces.			1
	A more detailed response Nylon is strong in tension and lightweight, and is flexible to wind around a peg once pulled in.			2
	A fully detailed response: Nylon is an ideal material because of its resistant to abrasion and shock absorption, where the rope needs to absorb a dynamic load like the bike. Nylon is durable, strong, long-lasting and resistant to corrosion or perishing, so will not deteriorate overtime in e.g. a garage.			3
	Accept other materials including polypropylene, polyester, hemp and steel wire, Kevlar. Accept any other appropriate response.			

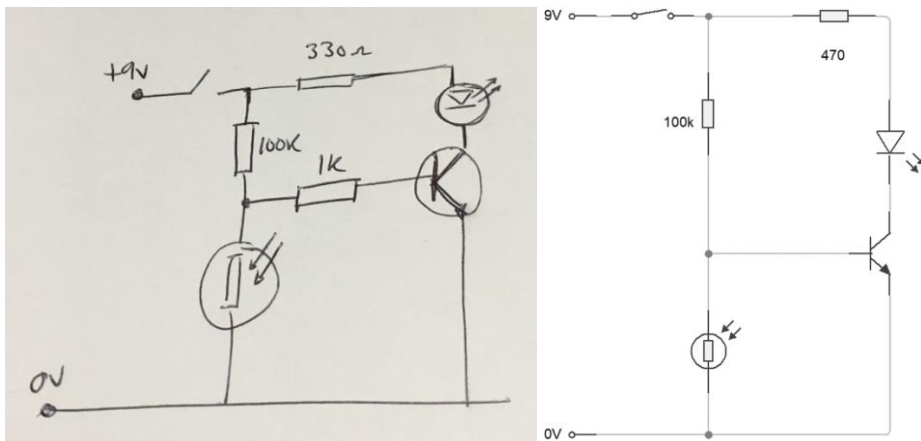
(b)	The clips that hold the items to be lifted are made from mild steel and are plastic coated. Using notes and sketches, in the space below, describe an appropriate process for finishing the mild steel clips.		✓	5
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response with very basic or no sketches Note – there must be a named appropriate finishing process The mild steel is covered in a plastic (or polymer) Accept the term dip coated.			1
	More detailed response with basic sketches The mild steel clips are heated and then covered in a plastic / thermoplastic / polymer to cover the mild steel.			2
	A detailed response with clear sketches The mild steel clips are cleaned / degreased and heated to high temperature and placed in a fluid bath / powder, which melts and covers the clips.			3
	A clear and detailed response with good quality sketches The mild steel clips are pre heated and degreased. They are then heated to 250 – 400 degrees and then immersed into the polymer bath / reservoir. The powder particles melt to cover the clips.			4
	A well-developed fully detailed response with excellent sketches The mild steel clips are pre heated and degreased. They are then heated to 250 – 400 degrees and then immersed into the polymer bath / reservoir where solid particles are kept floating in an upward stream of air. This ensures that the coating is applied evenly to the surface. The powder particles melt to cover the clips and provide a smooth and continuous coating for functional and aesthetic purposes.			5
Total				12

Question 4

A new cardboard eco projector has been developed, to provide a low-cost home cinema experience by magnifying the user's smartphone screen.		AO3	AO4	Mark
(a)	Describe the benefits to the designer of conducting a feasibility study prior to designing the new cardboard eco projector.		✓	4
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response. It allows the designer to decide whether it is worth completing the project.			1
	Or It allows the designer to take into account factors relating to the eventual success of the eco projector			1
	More detailed response. This allows the designer to consider economic, technical, legal and time constraints before continuing in case the eco projector may fail on completion.			2
	A detailed response. This allows designers to consider economic, technical, legal and time constraints before continuing in order to establish the likely eventual success for the eco projector and avoid it failing on completion.			3
	A clear and fully detailed response. This allows designers to consider economic, technical, legal and time constraints before continuing in order to establish the likely eventual success for the eco projector and the likely profits that could be made, to compare against the production costs including labour, to ensure the correct decision is made about the production of the eco projector going ahead or not and avoid it failing on completion.			4

(b)	The new cardboard eco projector will retail at £4.99. Explain how this will influence both the manufacturing processes involved and the overall scale of production.		✓	8
	Guidance: Responses must include manufacturing processes AND scale of production to access 8 marks. No answer or no relevant information presented or discussed. Simplistic or basic, lower level response only covering some manufacturing process or scale of production issues. The eco projector is a low budget product which would be produced using batch production to ensure that the number produced meets demand and no surplus products are made which would result in loss of profit / over production costs. Or The production processes would include manual labour and some automation / machinery to ensure identical products are produced consistently across the batches. More detailed response covering some of the manufacturing processes and some scale of production issues. The eco projector is a low-cost product which would be manufactured in large batches firstly to establish the success and demand for this product. The production line would be semi-automated to ensure accuracy and consistency in product outcome, but manual labour would be heavily used to complete tasks by hand and monitor machinery. A clear and detailed response covering most of the issues for both scale of production and manufacturing processes. The eco projector is a low-cost product which would be manufactured in large batches to establish the success and demand for this product. The production line would be semi-automated to ensure accuracy and consistency in product outcome, but manual labour would be heavily used to complete tasks by hand and operate machinery to prevent large investment to set up full automated production lines. A clear and fully detailed response covering all issues related to the scale of production and the manufacturing processes involved. The eco projector is a low-cost product which would be manufactured in large batches to establish the success and demand for this product. If the product demand is sufficient, this could increase to mass production or even continuous flow if the volume is required. The batch production line would be semi-automated to ensure accuracy and consistency in product outcome, but manual labour would be heavily used to complete tasks by hand and operate machinery to prevent large investment to set up full automated production lines. The product is produced as a flat pack which requires the user to assemble, this will reduce production costs. If mass or continuous flow production is established, there would be greater investment to fully automate the production line to increase productivity and efficiency, with less manual labour.			0 1-2 3-4 5-6 7-8
	Total			12

Question 5

The diagram below shows a student's plan for a simple transistor stripboard circuit and a photograph of the end result.		AO3	AO4	Mark
(i)	Produce an electronic circuit diagram for this system in the space below.		✓	5
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response Some attempt at a circuit diagram, some connection incorrect, some conventions incorrect.			1-2
	More detailed response with some accuracy and correct conventions, but some errors.			3-4
	A good circuit diagram, with most components drawn accurately with correct conventions. Circuit is correct with nearly all connections in place.			5
	A detailed and accurate response with correct conventions An excellent circuit diagram, with all convention and connections in place.			
Guidance: 				
Candidates need to sketch an accurate electronic circuit diagram, with correct conventions and connections. This will need to correspond to the strip board layout plan provided.				
(ii)	Describe in detail how the circuit functions.		✓	3
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response Once powered, the circuit will illuminate the LED when it is in dark conditions.			1
	More detailed response When powered and switched on, the LDR will need to be in dark conditions for the transistor to conduct and the LED to light up.			2
	A clear and detailed response When powered and switched on, the LDR will need to be in dark conditions to have a large resistance. This will drag 0.7v to the base of the transistor so it can conduct and then activate the LED.			3
Total				8

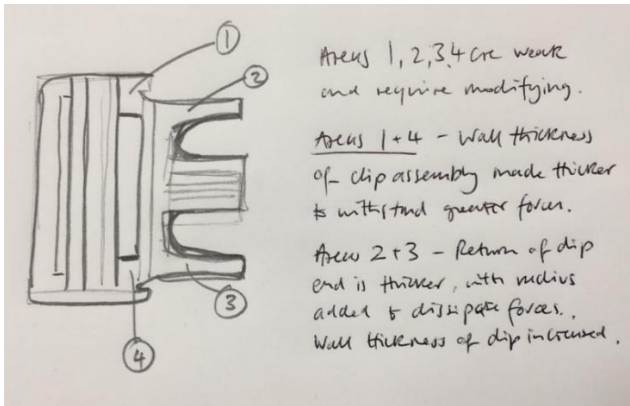
Question 6

Many towns and cities are now installing smart road traffic signs like the ones shown below.		AO3	AO4	Mark
(i)	Describe how advances in technology have influenced the development of smart road signs.		✓	4
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response The benefits of the smart signs are that they are naturally powered by solar energy. Or The smart signs do not need to be wired to the national grid Or The smart signs provide accurate and up to date information for road users			1
	More detailed response The smart signs use solar energy to charge up during the day so they can illuminate accurate feedback / information during day or night. Or The smart signs are cheaper to run because they use solar energy to power the illuminated output to provide information to road users.			2
	A detailed response The smart signs use solar energy to charge up during the day so they can illuminate during day or night at no cost to the highway's authority, whereas the more traditional signs have to be connected to the national grid for power. The technology to accurately detect car speeds and display this information allows the sign to be more interactive and effective. Illuminated displays can provide important information to road users and can be updated remotely.			3
	A clear and fully detailed response The smart signs use solar energy to charge up during the day so they can illuminate during day or night at no cost to the highways authority and helping reduce carbon footprint to meet government targets. Whereas the more traditional signs have to be connected to the national grid for power, and this limits where the signs can be positioned, making the solar smart signs far more versatile and flexible. Smart speed cameras can provide accurate information to road users to ensure speed limits are adhered to, and road information can be displayed and updated remotely as a result of technological capability.			4

(ii)	Explain the critical factors that would need to be present for the smart road traffic signs to achieve fitness for purpose.		✓	4
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response for benefit. The smart signs would need to have the PV panels facing the sun. Or Sunny conditions needed for signs to work best			1
	More detailed response. The smart signs would need to install in a suitable location for viewing by road users, with the PV cells positioned correctly to harvest the sun.			2
	A detailed response The smart signs would need to install in a suitable location for viewing by a wide range road users and vehicles, with the PV cells positioned correctly to harvest the sun during the day.			3
	A clear and fully detailed response The smart signs would need to install in a suitable location for viewing by a wide range road users and vehicles, with the PV cells positioned correctly to harvest the sun during the day. The display / light output would need to be as efficient as possible so that even during weather conditions that are not sunny, the PV cells generate sufficient power for the signs. Guidance: There may be other responses worthy of credit e.g. portable signs need to be situated on hard shoulder / not obstructing traffic. The ability for the sign to work effectively depending on the context of its use.			4
			Total	8

Question 7

The CAD model of a mechanical buckle shown below uses colours to analyse stress that can be anticipated when the product is subjected to external forces.		AO3	AO4	Mark
(i)	Describe two benefits to the designer of using CAD to model a successful mechanical buckle fastening.		✓	2 x 2
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response. To see if the design will work before making it Or To test the design on screen so no materials are wasted on testing if it goes wrong. Or To transfer the CAD drawing to CAM file for prototyping.			1
	More detailed response. The designer can model the design and simulate whether it is suitable or not, and modifications and changes can be made to improve the design. Or The designer can perfect the CAD model by testing and refining until it meets the specification criteria, and then translate the CAD file to CNC data for CAM manufacture or rapid prototyping Guidance: some other responses worthy of credit may include: • Global manufacture – to send the files overseas / to a different location for production. • To generate realistic images of the buckle to discuss / present with a client or target market to obtain feedback. • CAD is quicker than drawing by hand, and CAD can allow testing / simulating the buckle (as shown in the stress / strain test) • Collaboration – CAD allows multiple teams to work on the same project simultaneously from different locations.			2

(ii)	Explain the specific information this CAD model gives the designer.		✓	4
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response. The CAD drawing tells the designer where the weaknesses are			1
	More detailed response. The CAD drawing allows the designer to see how the mechanical buckle will perform, and the colours provide feedback on strengths and weaknesses.			2
	A detailed response. The CAD drawing is colour coded showing that the red areas are in danger of failing under the applied stress. These will need to be modified, until the red colour changes to yellow, then green, and finally blue.			3
	A clear and fully detailed response with comprehensive details of the process. The CAD drawing provides colour coded feedback based on the stresses and strains experienced by the mechanical buckle fastening when in use. The red areas are weak and will fail, so these require modification until the part / feature turn yellow. Blue areas are very strong and do not require changes. Candidates may make reference to FEA (finite element analysis) and may make reference to safety factors (e.g. 2.0) in responses and should be credited accordingly.			4
(iii)	Using annotated sketches, illustrate the modifications necessary to improve the mechanical buckle fastening following the production of the CAD model.		✓	4
	Guidance: Notes and sketches must be evident to award full marks			
	 Areas 1, 2, 3, 4 are weak and require modifying. Areas 1 + 4 - Wall thickness of clip assembly made thicker to withstand greater forces. Areas 2 + 3 - Return of dip end is thicker, with radius added to dissipate forces. Wall thickness of dip increased.			
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response. Some notes / and / or sketches presented identifying red / weak areas and providing an improvement.			1-2
	More detailed response Good quality notes and sketches to identify red areas from CAD drawing and refine / modify these areas. Adjustments to the design that improves the functionality of the buckle.			3-4
Total				12

Question 8

A high-quality indoor webcam is shown below.		AO3	AO4	Mark
(a)	Explain how the manufacturer would employ effective internal quality control (QC) and external quality assurance (QA) when mass producing the high-quality indoor webcam		✓	4
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response. The manufacturer would check the webcam as it is being made and at the end.			1
	More detailed response. The manufacturer would check the webcam as it is being manufactured at different stages, and a final test at the end to make sure it is working correctly and safe to use by the end user.			2
	A detailed response. The manufacturer would include regular checks, including sampling components, as they are produced to ensure they meet specifications. The quality assurance would be achieved when the end product is tested to ensure it is safe and fit for purpose, and this could include external testing and approval.			3
	A clear and fully detailed response. The manufacturer will include quality control checks, such as sampling, during production to ensure high quality and compliance. If there is an issue, production can be stopped, and the fault rectified back to the last known pass. The final assembled product will endure a final function test and will be approved by the manufacturer and tested by an external body, such as BSi or CE, for approval for use and fitness for purpose in its intended region.			4

(b)	Describe why the manufacturer would produce a critical path analysis prior to production, and the effect this would have when mass producing the high-quality indoor webcam.		✓	4
	No answer or no relevant information presented or discussed.			0
	Simplistic or basic response. To ensure they stay on track when manufacturing the webcam			1
	More detailed response. The manufacturer will use critical path analysis to plan / schedule the production of the webcam. This would help them visualise / realise what parts, components and time constraints apply.			2
	A detailed response. The manufacturer will use critical path analysis to plan / schedule the production of the webcam. This allows them to visualise / realise what parts, components and time constraints apply at any given stage or point during production.			3
	A clear and fully detailed response The manufacturer will use critical path analysis to plan / schedule the production of the webcam. This allows them to visualise / realise what parts, components and time constraints apply at any given stage or point during production. The critical path analysis would be used as a guide to establish production volume estimates and allow flexible manufacturing to create more products or review times / deadlines / targets.			4
		Total		8

Question 9

		AO3	AO4	Mark
(a)	“Good design is not about products; good design is about people.” Analyse how the work of Jonathan Ive relates to this theory.	✓		10
	No answer or no relevant information presented or discussed. Brief analysis of the meaning of the quote with no or little understanding of how people affect design. - The design must fit the intended user’s needs, wants and values, and this is critical, or the product will fail. - The end user must be able to use the product effectively. - The end product must be affordable and accessible to the target market - The end user should have an input at all stages of the iterative design process to ensure the product is successful. - Little or basic relation of response to Apple / Ive’s products			0
	More detailed analysis of the meaning of the quote with some understanding of how people affect design. - The design must fit the intended user’s needs, wants and values, and this is critical, or the product will fail. - The end user must be able to use the product effectively. - The end product must be affordable and accessible to the target market - The end user should have an input at all stages of the iterative design process to ensure the product is successful. - Designers need to communicate designs with other people in order to obtain feedback and refine ideas. - The end user must approve (morally, socially and ethically) of the product, and this needs to be ‘built in’ to the iterative process. - The production of the product relies on people heavily, commercial manufacturing, retail, customer support. - Some accurate reference to Apple / Ive’s products.			1-3
	A detailed and clear interpretation of the quote with a full and clear understanding of its application to the iterative design process - Identifying ‘gaps’ in the market involve problems that people experience, user / target market research and analysis. - The design must fit the specification to include intended user’s needs, wants and values, and this is critical, or the product will fail. - The end user must be able to use the product effectively, and it must solve the problem as intended. - The end product must be affordable and accessible to the target market - The end user should have an input at all stages of the iterative design process to ensure the product is successful. - Designers need to communicate designs with other people in order to obtain feedback and refine ideas. - The end user must approve (morally, socially and ethically) of the product, and this needs to be ‘built in’ to the iterative process. - The production of the product relies on people heavily, commercial manufacturing, retail, customer support. - Entrepreneur / product Champion / financial backers / IPO all rely on personnel to support and protect the product or service. - Marketing, media, advertising, contribute to customer support, PR and brand loyalty. - Clear and perceptive links made to Apple / Ive’s products.			4-6
	Guidance: High level responses require clear understanding and analysis of the meaning of the quote together with specific analysis of people are integral to the production of successful products.			7-10
Total				10

Question 10

		AO3	AO4	Mark
(a)	Evaluate how understanding the product life cycle can be critical to the manufacturers of regularly revitalised products. <i>Marks will be awarded for the content of the answer and the quality of written communication</i>	✓		10
	No answer or no relevant information presented or discussed.			0
	Brief evaluation of the importance of knowing the product life cycle and how this affects the manufacturer of revitalised products • Manufacturers need to know when sales peak, so that the next iteration of the product is required when sales drop. • Production needs to decrease once sales begin to decrease so that surplus products are not produced. • Manufacturers need to know when to advertise the new product and withdraw the old product. • To continue to make profit, the current product must be phased out and the new product introduced synonymously. • Quality of written communication is limited / basic, presenting material with limited / basic coherence, many errors of grammar, punctuation and spelling.			1-3
	More detailed evaluation of knowing the product life cycle and how this affects the manufacturer of revitalised products • Manufacturers need to know when sales peak, so that the next iteration of the product is required when sales drop. • Production needs to decrease once sales begin to decrease so that surplus products are not produced. • Manufacturers need to know when to advertise the new product and withdraw the old product. • To continue to make profit, the current product must be phased out and the new product introduced synonymously. • Manufacturers can introduce clearance strategies to 'sell off' existing products, still make profit, before new product is introduced. • Manufacturers need to invest in R&D when profit margins are high (peak sales) so that the futuristic model is developed concurrently. • Quality of written communication is good, presenting occasionally appropriate material with some coherence, some errors of grammar, punctuation and spelling.			4-6

	A detailed and clear evaluation of knowing the product life cycle and how this affects the manufacturer of revitalised products • Manufacturers need to know when sales peak, so that the next iteration of the product is required when sales drop. • Production needs to decrease once sales begin to decrease so that surplus products are not produced. • Manufacturers need to know when to advertise the new product and withdraw the old product. • To continue to make profit, the current product must be phased out and the new product introduced synonymously. • Manufacturers can introduce clearance strategies to 'sell off' existing products, still make profit, before new product is introduced. • Manufacturers need to invest in R&D when profit margins are high (peak sales) so that the futuristic model is developed concurrently. • The manufacturer can plan 'face lifts' to bolster sales by making simple / minimal changes to existing products / production systems. • Boosting sales strategies introduced at decline stage can provide sharp increases in sales and profit. • Quality of written communication is excellent, presenting wholly appropriate material in a coherent manner, hardly any errors of grammar, punctuation and spelling. Guidance: High level responses require clear understanding and evaluation of how the understanding of product life cycle affects the manufacturer of regularly revitalised products.	7-10
	Total	10