

Eduqas Advance Theory Paper Exam Information 2022

This information is the recent update from our exam board for

Design Technology GCSE (Textiles and Product Design).

It details which parts of the specification that you need to revise. We have tried where possible to link the topics to your **revision guidebook** to help you. When we complete your NEA, we will be revisiting and teaching these topics as well as practising past papers.

Technical Principles	Page	Revised/Revision Aid Created?
Core Knowledge and Understanding:		
<p>The impact of new and emerging technologies:</p> <ul style="list-style-type: none"> • Industry • Enterprise • Sustainability • People • Culture • Society • The Environment • Production Techniques • Systems <p>Amplification:</p> <p>The focus of this content is the impact of new and emerging technologies on the areas identified below.</p> <ul style="list-style-type: none"> • <i>The impact of new and emerging technologies on industry and enterprise:</i> <ul style="list-style-type: none"> • <i>market pull – responding to demands from the market.</i> • <i>technology push – development in materials and components, manufacturing methods.</i> • <i>consumer choice – consumers wishing to own the latest technologies/products.</i> <ul style="list-style-type: none"> • <i>The Product Life Cycle</i> • <i>Global production and its effects on culture and people.</i> <ul style="list-style-type: none"> • <i>Legislation to which products are subject.</i> • <i>Consumer rights and protection for consumers when purchasing and using products.</i> • <i>Moral and ethical factors related to manufacturing products and the sale and use of products.</i> • <i>Sustainability; meeting today's needs without compromising the needs of future generations.</i> • <i>Advantages and disadvantages of using computer aided design (CAD).</i> • <i>Advantages and disadvantages of the use of computer aided manufacture (CAM).</i> • <i>How CAM equipment can be used in a variety of applications: CNC embroidery, vinyl cutting, CNC routing, laser cutting and 3D printing.</i> 	<p>P1</p> <p>P1</p> <p>P2</p> <p>P2</p> <p>P2</p> <p>P3</p> <p>P3</p> <p>P3</p> <p>P3/4</p> <p>P4/5</p> <p>P4/5</p> <p>P4/5</p>	

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<p>Smart materials, composites, and technical textiles: the design and manufacture of products depends upon material technology and the development and implementation of materials in products. Learners need to be aware of developments in materials technology and how these impact on the design and use of products.</p>		
<p>Amplification:</p>		
<ul style="list-style-type: none"> • Electroluminescent film or wire i.e., LCD. 	P10	
<ul style="list-style-type: none"> • Quantum Tunnelling Composite (QTC) - when used in circuits the resistance changes under compression. 	P10	
<ul style="list-style-type: none"> • SMA – shape memory alloys. 	P11	
<ul style="list-style-type: none"> • Polymorph. 	P11	
<ul style="list-style-type: none"> • Smart fibres and fabrics that respond to the environment or stimuli: 	P12	
<ul style="list-style-type: none"> • photo chromic. 	P11	
<ul style="list-style-type: none"> • thermo-chromic. 	P11	
<ul style="list-style-type: none"> • micro-encapsulation. 	P11	
<ul style="list-style-type: none"> • biometrics. 	P11	
<ul style="list-style-type: none"> • Carbon Fibre, Kevlar, and GRP. 	P11	
<ul style="list-style-type: none"> • Interactive textiles that function as electronic devices and sensors: circuits integrated into fabrics, such as heart rate monitors; wearable electronics such as mobile phones or music player, GPS, tracking systems and electronics integrated into the fabric itself. 	P12	
<ul style="list-style-type: none"> • Micro-fibres in clothing manufacture. 	P12	
<ul style="list-style-type: none"> • Phase changing materials: breathable materials; proactive heat and moisture management 	P12	
<ul style="list-style-type: none"> • Sun protective clothing. 	P13	
<ul style="list-style-type: none"> • Nomex. 	P13	
<ul style="list-style-type: none"> • Geotextiles for landscaping. 	P13	
<ul style="list-style-type: none"> • Rhovyl as an antibacterial fibre 	P13	
	P14	

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<p>How electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to produce a range of outputs.</p> <p>Amplification:</p> <ul style="list-style-type: none"> • <i>Graphical conventions for communicating concepts: circuit diagrams, block diagrams and flowcharts.</i> • <i>The 'systems' approach – input; process; output.</i> • <i>Principles of a control system:</i> <ul style="list-style-type: none"> • <i>input data from a sensor: light dependent resistor (LDR), thermistor.</i> <ul style="list-style-type: none"> • <i>processing by control devices: semi-conductor, IC, microprocessor, or computer.</i> • <i>output where a signal is received that will perform a desired function: buzzer, light emitting diode (LED).</i> • <i>The importance of feedback within the system.</i> • <i>The methods of providing feedback in different systems.</i> • <i>Familiar products in terms of their control system.</i> • <i>Control devices that include counting, switching, and timing.</i> • <i>Analogue and digital sensors as input components</i> 	<p>P14,15 16,17 and 18.</p>	

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<p>The functions of mechanical devices, to produce different sorts of movement, changing the magnitude and direction of forces.</p> <p>Amplification:</p> <ul style="list-style-type: none"> • <i>Principle of a mechanical device to transform input motion and force into a desired output motion and force.</i> • <i>Analyse everyday mechanical devices and how they function.</i> <ul style="list-style-type: none"> • <i>Consider mechanical systems in terms of input; process; output.</i> • <i>Mechanical systems which:</i> <ul style="list-style-type: none"> • <i>increase or decrease speed of movement/rotation.</i> • <i>change magnitude/direction of force/movement/rotation.</i> • <i>Simple calculations involving mechanical systems.</i> • <i>Analyse the function of mechanical products that have:</i> <ul style="list-style-type: none"> • <i>pulley systems, e.g., curtain rails, sewing machine.</i> • <i>gear systems, e.g., whisk, hand drill.</i> • <i>levers and linkages, e.g., scissors.</i> • <i>rack and pinion, e.g., chair lift.</i> • <i>cams, e.g., automata toys</i> 	<p>P18,19 P20,21</p>	

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Technical Principles In Depth Knowledge and Understanding:	Pages	Revised/R evision Aid Created?
<p><i>Specialist techniques and processes that can be used to shape, fabricate, construct, and assemble a high-quality prototype, including techniques such as wastage, addition, deforming and reforming, as appropriate to the materials and/or components being used.</i></p> <p>Amplification:</p> <ul style="list-style-type: none"> • <i>Wastage/Addition</i> • <i>Cutting thermosetting and thermoforming plastics to the required shape or contour.</i> <ul style="list-style-type: none"> • <i>Tools and equipment to mark out, hold, cut, shape, drill, and form plastics</i> • <i>The pillar drill to drill holes to various diameters.</i> • <i>Jigs and formers to ensure accuracy as part of the process of drilling.</i> <ul style="list-style-type: none"> • <i>Pilot, clearance, tapping, countersunk and counterbored holes.</i> <p><i>Deforming/Reforming</i></p> <ul style="list-style-type: none"> • <i>Plastics joining can be permanent or temporary, by plastic welding and the use of nuts, bolts, washers, screws, rivets, hinges, catches.</i> • <i>Lathe to turn materials.</i> • <i>Milling machine to create a slot or face edge.</i> • <i>Lasers.</i> • <i>CAM machines.</i> • <i>Blow moulding.</i> • <i>Vacuum forming.</i> • <i>Press moulding</i> 	P99-102	

