

## A2 level Resistant Materials PLC

Topic	Yes I'm Happy	No, I need more information
<p>I understand the characteristics, processes, application, advantages/disadvantages of <b>ICT in the development, manufacture and sales of products in the global marketplace</b>:</p> <p>Electronic communications</p> <ul style="list-style-type: none"> <li>• email</li> <li>• Electronic Data Interchange (EDI)</li> <li>• Integrated Services Digital Network (ISDN) and broadband</li> <li>• Local Area Networks (LAN)</li> <li>• global networks (internet)</li> <li>• video conferencing</li> </ul> <p>Electronic information handling</p> <ul style="list-style-type: none"> <li>• market analysis</li> <li>• specification development</li> </ul> <p>Automated stock control</p> <ul style="list-style-type: none"> <li>• 'just in time' (JIT)</li> </ul> <p>Production scheduling and production logistics</p> <p>Flexible manufacturing systems (FMS)</p> <ul style="list-style-type: none"> <li>• quick response manufacturing (QRM)</li> </ul> <p>Production control</p> <p>Marketing, distribution and retailing of products using:</p> <ul style="list-style-type: none"> <li>• electronic point of sale (EPOS)</li> <li>• internet marketing.</li> </ul>		
<p>I understand:</p> <p><b>a) Characteristics, advantages/disadvantages and the impact on the environment of the following <b>genetic engineering techniques</b> when manufacturing products:</b></p> <ul style="list-style-type: none"> <li>• Altering genes in woods to provide quicker-growing trees, or to supply wood that resists wear, rot or infestation</li> <li>• Use of micro-organisms to aid the disposal of environmentally-friendly plastics</li> <li>• Producing materials that are totally recyclable.</li> </ul> <p><b>b) The sources, manufacture, application and advantages/disadvantages of the following biodegradable polymer:</b></p> <ul style="list-style-type: none"> <li>• Biopol®.</li> </ul> <p><b>c) Characteristics, application and advantages/disadvantages of adding the following additives to polymers:</b></p> <ul style="list-style-type: none"> <li>• plasticisers</li> <li>• fillers</li> <li>• fibres</li> <li>• stabilisers</li> <li>• foamants.</li> </ul> <p><b>d) Characteristics, application and advantages/disadvantages of modifying woods:</b></p> <ul style="list-style-type: none"> <li>• lamination.</li> </ul>		
<p>I understand the characteristics, processes, application and advantages/disadvantages of <b>advanced manufacturing technology (AMT) which enable quick response manufacturing (QRM)</b>, including:</p>		

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<ul style="list-style-type: none"> <li>• concurrent manufacturing</li> <li>• flexible manufacturing systems (FMS).</li> </ul>		
<p>I understand the characteristics, processes, application, advantages/disadvantages and its <b>impact on employment of CIM systems to integrate the processing of production and business information with manufacturing operations, including:</b></p> <ul style="list-style-type: none"> <li>• data integration involving product data management (PDM) and enterprise resource planning (ERP) systems</li> <li>• lean manufacturing using just-in-time (JIT) systems</li> <li>• computer-aided manufacture (CAM) involving CNC equipment and computer-aided quality (CAQ) in flexible manufacturing cells materials handling systems including automated storage and retrieval systems (ASRS) and automatic guided vehicles (AGVs).</li> </ul>		
<p>I understand the application, advantages/disadvantages and its <b>impact on employment of complex automated systems,</b> including:</p> <ul style="list-style-type: none"> <li>• robots on fully automated production and assembly lines/cells</li> <li>• development of artificial intelligence (AI) for industrial</li> <li>• applications.</li> </ul>		
<p>I understand the application of <b>flow charts to represent open and closed loop systems for quality control of production processes.</b></p>		
<p>I understand the impact and advantages/disadvantages of the following <b>technological changes on society in relation to product manufacture.</b></p> <p>Mass production:</p> <ul style="list-style-type: none"> <li>• consumer society including built-in obsolescence</li> <li>• employment.</li> </ul> <p>The 'new' industrial age of high-technology production:</p> <ul style="list-style-type: none"> <li>• computers in the development and manufacture of products</li> <li>• miniaturisation of products and components</li> <li>• use of smart materials and products for innovative applications.</li> </ul> <p>The global marketplace:</p> <ul style="list-style-type: none"> <li>• multinational companies in developed countries manufacturing 'offshore' in developing countries</li> <li>• local and global production.</li> </ul>		

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<p>I understand the characteristics in terms of <b>design styles, philosophy and influences on design culture of the following designers and design movements:</b></p> <ul style="list-style-type: none"> <li>• William Morris and the Arts and Crafts movement</li> <li>• Charles Rennie Mackintosh and the Art Nouveau movement</li> <li>• Marcel Breuer and the Bauhaus modernist movement</li> <li>• Eileen Gray and the Art Deco movement</li> <li>• Raymond Loewy and streamlining</li> <li>• Philippe Starck and the New Design style (post-modernism).</li> </ul>		
<p>I understand the debate regarding '<b>form versus function</b>' including the following two opposing views when designing products:</p> <ul style="list-style-type: none"> <li>• form follows function (functionality as prime driver)</li> <li>• form over function (aesthetics as prime driver).</li> </ul>		
<p>I understand the principles and application of anthropometrics data and ergonomics:</p> <ul style="list-style-type: none"> <li>• key ergonomic factors for a designer to consider when developing products, equipment and environments with human interaction</li> <li>• sources and applications of anthropometric data.</li> </ul>		
<p>I understand the application of <b>LCA to assess the impact of a product 'from the cradle to the grave' using a life cycle inventory of:</b></p> <ul style="list-style-type: none"> <li>• environmental inputs and outputs of raw materials, energy resources and emissions</li> <li>• economic inputs and outputs of products, components or energy that are outputs from other processes.</li> </ul>		
<p>I understand the application of '<b>cleaner</b>' design and technology throughout each of the stages of a product's life cycle in relation to the following sustainable development issues:</p> <p>Design</p> <ul style="list-style-type: none"> <li>• for reducing environmental impact</li> <li>• for recycling</li> </ul> <p>Raw materials</p> <ul style="list-style-type: none"> <li>• reduction or recycable</li> <li>• reduce environmental impact</li> </ul> <p>Manufacture</p> <ul style="list-style-type: none"> <li>• minimising waste and energy use</li> <li>• simplifying processes</li> <li>• efficient use of natural resources</li> </ul> <p>Distribution</p> <ul style="list-style-type: none"> <li>• reduce or lighten packaging</li> <li>• reduce mileage of transportation to the customer</li> <li>• alternatives to fossil fuels</li> </ul> <p>Use</p> <ul style="list-style-type: none"> <li>• repair versus replacement.</li> </ul>		

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<p>I understand the principles and application of <b>minimising waste production throughout the product life cycle using the following 'four R's'</b>:</p> <ul style="list-style-type: none"> <li>• reduce</li> <li>• reuse</li> <li>• recover</li> <li>• recycle.</li> </ul>		
<p>I understand the characteristics, comparisons, applications and advantages/<b>disadvantages of using the following renewable and non-renewable sources of energy</b>:</p> <ul style="list-style-type: none"> <li>• wind</li> <li>• water</li> <li>• solar</li> <li>• biomass and biofuels</li> <li>• nuclear</li> <li>• fossil fuels.</li> </ul>		
<p>The I understand the <b>responsibility in relation to social, economic and environmental issues for global sustainable development.</b></p> <p>Impact of industrialisation on global warming and climate change.</p> <ul style="list-style-type: none"> <li>• United Nations Framework Convention on Climate Change (UNFCCC) including Kyoto Protocol.</li> <li>• Reduction of an individual's 'carbon footprint' by reducing carbon dioxide emissions and carbon offsetting</li> <li>• Non-Fossil Fuel Obligation (NFFO) in the UK.</li> </ul> <p>Timber production and sustainable forest management.</p>		