**Old Buckenham High School | Year 11 – The Year Ahead | 11th October 2018**

**DESIGN AND TECHNOLOGY**

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| **Exam** | **Duration** | **Marks available** | **% of GCSE** | **Topics/ content** |
| **Design and Technology:**  **Component 1 8552**  Written Paper | 2 hours | 100 | 50% | **Section A:**  **Core Technical principles**  (20 marks)  **Section B:**  **Specialist technical principles**  Materials, manufacturing and the impact on the environment.  (30 marks)  **Section C:**  **Designing and Making principles**  (50 marks) |
| **Design and Technology: Component 2 8552/C**  NEA (Non-Examined Assessment) | 30-35 hours (guidance) | 100 | 50% | **Identifying and investigating design possibilities** (10 marks)  **Producing a design brief and specification** (10 marks)  **Generating design ideas**  (20 marks)  **Developing design ideas**  (20 marks)  **Realising design ideas**  (20 marks)  **Analysing and Evaluating**  (20 marks) |

*Before revising, students should complete personal learning checklists for their subjects. These ask students to RAG rate both the topics/ content of their exams and also the skills they are required to use. Doing this will help them to identify priorities and make effective use of their revision time.*

**Personal Learning Checklists**

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|  |  | **Collins AQA Revision book** | **R** | **A** | **G** |
|  | **Topic** | **Page** |
| **Approaches to Designing** | **1– Design Strategies.**   * Describe the main features of iterative design, user-centred design and systems-based approach to design * Explain the advantages and disadvantages of using each design strategy. | **8-9** |  |  |  |
| **2 – Electronic systems.**   * Describe the main stages that make up an electronic system. * Understand, select and use appropriate input, process and output devices in products. | **10-11** |  |  |  |
| **3 – The work of others: Designers.**   * Analyse and evaluate the work of at least two different designers. * Use the work of past and present designers to aid your own designing. **(demonstrate in NEA)** | **12-13** |  |  |  |
| **4 – The work of others: Companies.**   * Analyse and evaluate the work of at least two different design companies. * Use the work of design companies to aid your own designing.  **(demonstrate in NEA)** | **14-15** |  |  |  |
| **5 – Ecological, Environmental and Social Issues.**   * Explain how designing and making is affected by ecological, environmental and social issues. * Discuss the benefits of fair trade for producers and consumers. | **16-17** |  |  |  |
| **Designing Products** | **6 – Research & Investigation**   * Describe the main methods of conducting research and investigation * Explain the difference between primary and secondary data * Describe the use of ergonomics and anthropometric data when researching and designing products | **22-23** |  |  |  |
| **7 – Briefs & Specifications**   * Write a design brief and a design specification for a product or system * Modify a design brief as a result of user feedback * Produce a manufacturing specification for a product or system | **24-25** |  |  |  |
| **8 – Exploring & Developing Ideas**   * Describe the main stages of developing a design idea * Explain the use of card models, toiles and breadboards | **26-27** |  |  |  |
| **9 –Communication of Ideas 1**   * Produce sketches using perspective and isometric projection * Describe how to produce an exploded drawing * Annotate a drawing effectively to explain features of a design | **28-29** |  |  |  |
| **10– Communication of ideas 2**   * Use and produce working drawings * Describe how mathematical modelling and computer-based tools are used to communicate design ideas * Explain how ideas can be physically modelled. | **30-31** |  |  |  |
| **11 – Computer Based Tools**   * Explain the effects and benefits of computer-based tools when communicating ideas * Describe how computer-based tools can be used to share and present ideas and technical information | **32-33** |  |  |  |
| **12 – Prototype Development**   * Explain why designers produce prototypes * Explain the considerations that need to be taken account of when developing prototypes * Describe and explain how a prototype of a product or system can be evaluated | **34-35** |  |  |  |
| **Energy & Mechanisms** | **13 – Energy Generation and Storage**   * Describe how energy is generated and stored. * Explain the advantages and disadvantages of using renewable energy sources to power products and systems | **46-47** |  |  |  |
| **14 – Mechanical systems 1**   * Describe the four types of motion. * Describe the basic principles of a lever. * Explain the different classes of lever. | **48-49** |  |  |  |
| **15 – Mechanical systems 2**   * Describe how linkages, cams, gears and pulleys transfer motion * Explain how these mechanical devices are used to change the magnitude and direction of forces. | **50-51** |  |  |  |
| **Materials & Their Properties** | **16 – Properties of materials**   * Explain the meanings of the properties of materials. * Describe the typical properties of different types of materials. | **60-61** |  |  |  |
| **17 – Materials: Paper and board**   * Describe the characteristic properties and common uses of a variety of paper and boards. * Describe the standard sizes of paper. * Explain how paper and boards are converted into usable material. | **61-62** |  |  |  |
| **18 – Materials: Timber**   * Explain the difference between hardwood and softwood. * Describe the characteristic properties and common uses of a variety of natural and manufactured timbers. * Explain how timber is converted into usable material. | **64-65** |  |  |  |
| **19 – Materials: Metals**   * Explain the difference between ferrous and non-ferrous metals. * Describe the characteristic properties and common uses of a variety of metals. * Explain how metal ore is converted into useable material. | **66-67** |  |  |  |
| **Materials & Their Properties** | **20 – Materials: Polymers.**   * Explain how polymers are converted into useable material. * Explain the difference between thermoforming and thermosetting polymers. * Describe the properties and uses of a variety of polymers. * Describe the forms in which polymers are available. Explain what happens to polymers at the end of their usable life. | **68-69** |  |  |  |
| **21 – Materials: Textiles.**   * Explain how fabric is constructed from fibres. * Explain the difference between natural, synthetic & blended fibres. The characteristic properties & common uses of a variety of textiles. | **70-71** |  |  |  |
| **22 – Materials: New materials.**   * Describe the characteristics of a variety of new materials. * Explain what is meant by a smart material and a composite material.   List specific technical textiles, and modern, smart and composite materials, and their typical uses. | **72-73** |  |  |  |
| **23 – Standard Components.**   * Explain why standard components are used. List standard components used with a variety of different materials. | **74-75** |  |  |  |
| **24 – Finishing materials.**   * Explain the purpose of surface treating and finishing materials. Describe how surface treatments and finishing techniques are applied to a range of materials. | **76-77** |  |  |  |
| **25 – Selection of materials.**   * Describe a wide range of factors that can influence the choice of material for a product. Explain the important properties required by commercial products. | **78-79** |  |  |  |
| **26 – Working materials.**   * Explain why reinforcement is used in products. * Describe how the properties of a material can be enhanced. Describe a range of examples of how product designs can be modified to improve the performance of a product. | **80-81** |  |  |  |
| **Tools, Equipment and Processes** | **27 – Scales of Manufacture.**   * Describe the characteristics and give examples of different scales of manufacture. Explain why the equipment used changes with the scale of manufacture. | **92-93** |  |  |  |
| **29 – Manufacturing Processes 2: Timber-Based Materials.**   * Identify the processes and equipment used to manufacture products from timber-based materials. | **96-97** |  |  |  |
| **30 – Measurement and Production Aids.**   * Explain the meaning and importance of reference points used in measurement. * Explain the reasons why production aids are used. Describe how jigs, templates and patterns are used in product manufacture. | **104-105** |  |  |  |
| **31 – Ensuring Accuracy.**   * Explain the reason why accuracy is important when manufacturing products and prototypes. * Explain the meaning and importance of quality control and quality assurance (QC & QA). Explain the importance of tolerances when manufacturing products. | **106-107** |  |  |  |
| **New & Emerging Technologies** | **32 – Impact on Industry.**   * Explain the impact of new and emerging technologies on industry and enterprise. Discuss the potential effects of the use of new and emerging technologies on employment. | **122-123** |  |  |  |
| **33 – Impact on Production.**   * Explain the impact of CAD and CAM on production. Explain how production techniques and systems improve manufacturing efficiency. | **124-125** |  |  |  |
| **34 – Impact on Society and the Environment.**   * Explain the impact of new and emerging technologies on sustainability and the environment. Discuss the potential effects of new designs on culture and society. | **126-127** |  |  |  |