**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** |  |  |  |