

Revision Pack for: GCSE Engineering

Exam Board: AQA

Link to Specification:

<http://www.aqa.org.uk/subjects/engineering/gcse/engineering-4850>

Past Papers and mark schemes:

<http://www.aqa.org.uk/subjects/engineering/gcse/engineering-4850>

Examination Format:

Unit 1: Written paper (48501)

1 hour - 75 marks - 40%

Candidates answer questions on two sections

Pre-Release material issued: Will be place on Campus Website on release.

Assessment Objectives:

| Assessment Objectives | | Unit Weightings (%)Written Paper |
|-----------------------|--|----------------------------------|
| AO1 | Recall, select and communicate knowledge and understanding in design and technology including its wider effects. | 15 |
| AO2 | Apply knowledge, understanding and skills in a variety of contexts and in designing and making products. | 10 |
| AO3 | Analyse and evaluate products, including their design and production. | 10 |
| Overall Weighting | | 40 |

In GCSE specifications which require you produce written material in English, you must:

- ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear
 - select and use a form and style of writing appropriate to purpose and to complex subject matter
 - organise information clearly and coherently, using specialist vocabulary when appropriate.
- In this specification QWC will be assessed in the Controlled Assessment and in the written paper.

The controlled assessment criteria give further information on marks to be awarded in respect of QWC.

What to Revise

<http://www.aqa.org.uk/subjects/design-and-technology/gcse/design-and-technology-product-design-4555/subject-content/unit-1>

UNIT 1 : Materials, Technologies and Design Considerations.

Materials, Technologies and Design Considerations

This unit provides details of the subject content to be covered by candidates for the Single Award. Candidates are required to use the stated knowledge and understanding in the Unit 1 examination and in the completion of their Controlled Assessment in Unit 2. The content has been divided into two sections:

Designing and Communicating

Understanding Engineered Products.

Designing and Communicating

Use a client design brief

To determine the function and user requirements To establish the limits or constraints on a design

Convert a client design brief to a specification

To specify: size, shape, function, limiting features, functional requirements

Use and modify a specification

Use the design process to

Generate ideas/possible design solutions for engineered products

Produce a solution expressed as a drawing/model

Simple drawing techniques

Orthographic projection – third angle only

Isometric projection

Manual drawing methods

Formal drawing and sketching

Scale – 1:1 1:2 1:5

Computer Aided Design

2D using standard conventions either electrical or mechanical

3D solid modelling

Using a computer program to simulate the operation of an electrical or mechanical system

Explain a design proposal to a third party

Use drawings or models to present ideas

Respond to client feedback

Designing and Communicating

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[Understanding engineered products](#)

Materials

- Polymers
- Ferrous metals
- Common non-ferrous metals and alloys
- Composites
- Ceramics

Ability to be

- shaped and formed
- machined
- treated
- given a surface finish
- re-cycled and re-used

Comparative ease of handling, cost, availability and form

Components

- Mechanical
- Electrical and electronic
- Pneumatic/hydraulic

Production methods including mould and jig use

[Understanding engineered products](#)

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Production methods including mould and jig use

[Collapse Manufacturing an Engineering Product](#)

Produce production plans

Manufacturing to a production plan, which is related

to the production of a "one-off" or limited batch

production of an engineering product

Using tools and equipment

Understanding the reasons for the selection and use of specified materials, components, processes, tools and equipment

Working safely

Identification of Health and Safety issues including the use of Personal Protective Equipment

Quality issues – tolerances and using accurate measurement systems

Planning and organisation – organising the work, planning sequences of operations

Analyse and revise the completed project, taking into account how it could be improved

Engineering Processes

Including material removal, shaping and manipulation, joining and assembly, heat and chemical treatment and surface finishing including the following

Machining operations

Turning

Milling or routing

Drilling

Cutting

e.g. sawing, shearing

shaping

casting

forming

bending or vacuum forming

joining

Rivet, threaded fasteners, welding and soldering

Surface finishing

Painting, plating, surface finishing

[Application of New Technologies](#)

CNC cutting limited to two axes, e.g. vinyl or laser cutters, drilling or profile cutting or milling
Printed Circuit Board.

Impact of Modern Technologies

Describe the impact of modern technologies:

- when engineering a product
- on engineered products
- on engineering industries
- on the stages of engineering a product.

Describe the advantages and disadvantages that the use of modern technology has brought to society, including environmental issues and sustainability.

Investigate a range of engineered products to determine the impact of modern technology on design and production methods.

How to Revise

Read and Memorise.

- Summary notes - short version of main notes.
- List of keywords for each topic covered, which can act as "triggers" for other ideas. • Some kind of diagrammatic representation of notes can be helpful.
- Revise with a friend - if possible, exchange ideas during revision - this can be very helpful to both people in understanding topics and building confidence.
- Questions and Answers - get a friend to ask you specific questions about topics and think up questions to ask your friend. This will test and help to build your own understanding.
- Make up a set of revision cards - with one main topic per card, each topic listing ideas or information for this topic. You can carry these cards with you and, if you choose, get them out and revise whilst a passenger in a car or on the bus or train, or when queuing somewhere.

<http://www.design-technology.info/revisionguides/>

<http://gcseproductdesign2015.weebly.com/exam-tips.html>

Examination Strategies:

- They will be developed during revision session through exam practical and walk through papers.
- Leave the first question relating to the design and pre-release paper until last.
- Answer the questions that you feel most confident with first.
- Guidance on times spent on each questions are given.
- Keep to the timings so that you can maximise your potential marks by completing all questions in full.

Key words with definitions:

<http://www.technologystudent.com/prddes1/prddex1.html>

Command words with definitions:

<http://www.technologystudent.com/prddes1/prddex1.html>

Model response with annotations.

Stantonbury Google drive has references to model responses to the various types of questions.

Helpful websites.

<http://www.technologystudent.com>

<http://www.bbc.co.uk/schools/gcsebitesize/design/resistantmaterials/designanalysevaluationrev1.shtml>

Apps:

Design & technology by J Plimmer is a good app and can be downloaded for Apple and Andriod for 79p.

Plastic Guide by Bruder Consulting AB (Free to download for Apple and Andriod)

iDT HD by Ray Gentleman (Free to download for Apple and Andriod)

iD Cards - Loughborough Design School By Loughborough University (Free to download for Apple and Andriod)