

OCR Engineering Design R038 Exam Unit **RAG**

I can know and understand the following:

	Red	Amber	Green
1.1 The stages involved in design strategies (Linear design, Iterative design, Inclusive design, User-centred design, Sustainable design, Ergonomic design)			
1.2 Stages of the iterative design process, and the activities carried out within each stage of this cyclic approach (Design, Make and evaluate)			
2.1 Types of criteria included in an engineering design specification (ACCESSFM)			
2.2 How manufacturing considerations affect design			
Scale of manufacture: one-off, batch, mass			
Types of manufacturing processes: wasting, shaping, forming, joining, finishing, assembly			
Production costs: labour and capital cost			
Market pull and Technology push			
British and International Standards			
Legislation			
Planned obsolescence			
Sustainable design (6Rs) ♣ Rethink ♣ Reuse ♣ Recycle ♣ Repair ♣ Reduce ♣ Refuse			
Design for the circular economy			
3.1 Types of drawing used in engineering (Freehand sketching, Isometric, Oblique, Orthographic drawings, Exploded views, Assembly drawings, Block diagrams, Flowcharts, Circuit diagrams, Wiring diagrams)			
3.2 Working drawings			
2D engineering drawings using third angle orthographic projection			
Standard conventions, title block, metric units of measurement, scale, tolerance			
Standard conventions for dimensions: linear measurements, radius, diameter, surface finish			
Meaning of line types: outlines, hidden detail, centre line, projection, dimension, leader line			
Abbreviations: across flats, centre line, diameter, drawing, material, square			
Representations of mechanical features: threads, holes, chamfers, countersinks, knurls			
3.3 Using CAD drawing software (Advantages and limitations of using CAD drawing software compared to manual drawing techniques)			
4.1 Methods of evaluating design ideas (Production of models, Qualitative comparison with the design brief and specification, Ranking matrices, Quality Function Deployment (QFD))			
4.2 Modelling methods (Virtual (3D CAD), Card, Block, Breadboarding, 3D printing)			
4.3 Methods of evaluating a design outcome			
Methods of measuring the dimensions and functionality of the product			
Quantitative comparison with the design brief and specification			
User testing			
Reasons for identifying potential modifications and improvements to the design			