

<p>board and grey board.</p> <ul style="list-style-type: none"> • Understand that many paper-based boards are laminated to other materials and that the composite can be adjusted to create different properties for specific purposes. • Understand the properties and uses of thermoplastics; i.e. HIPs. PVC, Polypropylene (PP) and acetate. • Understand the properties of sheet and block modelling materials and their uses; i.e. Foam core board, corrugated plastic sheet and expanded polystyrene (Styrofoam) and machining foams. • Understand the use of spiral wound tubes. • Make judgements about cost, flexibility, finish, rigidity, strength, quality, weight, and environmental and sustainable issues. • Know how to apply a quality finish to modelling materials including fillers and finishing with acrylic and water based paints. • Know the functions, uses and applications of ‘smart’/modern materials; i.e. Precious Metal Clays (PMC) used in jewellery manufacture, corn starch polymers, paper foam and potatopak used in packaging and thermochromic pigments used for thermal warning 								
--	--	--	--	--	--	--	--	--

<p>patches.</p> <ul style="list-style-type: none"> • Be able to use a full range of graphic equipment to develop hand-generated images. • Use a range of appropriate adhesives for different materials; i.e. PVA, epoxy resins, spray glues/hot glue, cements, tape and adhesive plastic film. • Use a range of hand and powered cutting and forming tools safely; i.e. scalpels and craft knives with mats, scissors, rotary cutters, compass cutters, fret saw, die cutter and creasing bars. • Use 'bought-in' components where appropriate. i.e. fasten, seal, hang, join, bind, index. • Understand how graphic materials can be linked with other components and materials to produce a product designed for a specific purpose. 								
<p>Design & Market Influences</p> <p>Designers:</p> <ol style="list-style-type: none"> 1. Recognise that designers are influencing new graphic products. 2. Recognise the style of the work of the following designers: <ul style="list-style-type: none"> – Harry Beck – Alberto Alessi – Jock Kinneir and Margaret Calvert 								

<ul style="list-style-type: none"> - Wally Olins - Robert Sabuda. 								
<p>Techniques & Processes:</p> <ol style="list-style-type: none"> 1. Be able to communicate a concept to a potential client, manufacturer or purchaser 2. Know the functions of mock-ups, models and prototypes and the importance they can play in the design process. 3. Know how 'target marketing' and 'gap in the market' identification is used to promote a product. 								
<p>Sketching:</p> <ol style="list-style-type: none"> 1. Produce quality, annotated 2D and 3D freehand drawings. 2. Use crating/wire frame techniques to produce drawings. 3. Use grids and under-lays. 								
<p>Enhancement:</p> <ol style="list-style-type: none"> 1. Use pencils, pens and colour to add visual impact to designs and accentuate shape and form. 2. Use textural representation to convey different materials and surfaces. 3. Demonstrate an understanding of contrast, complementary, hue and tone. 4. Apply the language of colour. 5. Be aware of colour fusion and separation and its commercial application. 								

<p>Presentation:</p> <ol style="list-style-type: none"> 1. Demonstrate knowledge of computer graphic manipulation. 2. Generate and select suitable lettering. 3. Have knowledge of encapsulation. 4. Use presentation drawings conceptualise the final design. 5. Use ICT to promote the final design to the client. 								
<p>Pictorial Drawings:</p> <ol style="list-style-type: none"> 1. Produce one point and two point perspective sketches. 2. Produce isometric sketches. 								
<p>Working Drawings:</p> <ol style="list-style-type: none"> 1. Use third angle orthographic projection to British Standard Conventions (BS8888, 2006). 2. Demonstrate use of self-assembly, sectional and exploded drawings. 3. Use and understand scale drawings. 4. Interpret room, site plans and maps. 								
<p>Surface Development (net):</p> <ol style="list-style-type: none"> 1. Understand how 3D containers are manufactured from sheet material and be able to draw a net. 2. Demonstrate knowledge of CAD/CAM to produce and manipulate surface development. 								

<p>Information Drawings:</p> <ol style="list-style-type: none"> 1. Represent data in graphical form; i.e. 2D and 3D bar and pie charts, line graphs and pictographs. 2. Understand the language of labels and signage. 3. Understand the function and uses of corporate identity. 4. Produce ideograms, pictograms and symbols. 5. Produce flowcharts with feedback loops. 6. Produce sequential illustrations. 7. Produce schematic maps. 								
<p>Paper & Card Engineering Products & Applications:</p> <ol style="list-style-type: none"> 1. Distinguish between quality of design and quality of manufacture. 2. Have an understanding of product life-cycle including design introduction, evolution, growth, maturity, decline and replacement. 3. Understand the needs and wants of customers. 4. Use criteria to judge the quality of a graphic product i.e. meeting a need, fitness of purpose, appropriate use of materials and time. 								
<p>Evaluation Techniques:</p> <ol style="list-style-type: none"> 1. Know why evaluation is important and its contribution to designing an on-going 								

<p>product improvement.</p> <ol style="list-style-type: none"> 2. Identify the role end-users and others play in evaluation. 3. Identify ways in which a product can be tested or evaluated. 4. Test the outcomes against the original specification. 5. Produce a summative evaluation of their final outcome against their original specification. 								
<p>Social, Cultural, Moral, Environmental, Economic and Sustainability Issues:</p> <ol style="list-style-type: none"> 1. Recognise that graphical images and products should not offend minority groups. 2. Consider moral and cultural implications of graphic products. 3. Consider ergonomics and use of anthropometric data when designing products. 4. Understand symbols and signs, which are essential information on packaging. 								
<p>Economic:</p> <ol style="list-style-type: none"> 1. Understand the materials and social costs of packaging. 2. Have an awareness of planned obsolescence. 								
<p>Sustainability:</p> <ol style="list-style-type: none"> 1. Be aware of the 6 R's rules – repair, reduce, recycle, re-use, re-think, refuse. 2. Consider environmental issues 								

<p>related to graphic products.</p> <ol style="list-style-type: none"> 3. Understand the reasons for and consequences of, the increased and reduced use of product packaging. 4. Be aware of the advantages and disadvantages of re-cycling and re-using materials. 								
<p>Information & Communication Technology:</p> <ol style="list-style-type: none"> 1. Identify the component parts of a CAD/CAM system. 2. Recognise different CAD/CAM and ICT input and output devices and their function. 3. Select and use appropriate CAD software. 4. Select and use appropriate ICT and graphic software. 5. Know the benefits and costs of CAD/CAM and ICT. 6. Produce virtual reality models using CAD software. 7. Know that the electronic transfer of data permits designing and manufacturing activities to take place in different geographic locations. 8. Use photographic evidence. 9. Use photographic evidence from any source including digital or video record any stages during Design and Manufacture and promotion. 								
<p>Health & Safety Issues:</p> <ol style="list-style-type: none"> 1. Be aware of information 								

<p>regarding the safe handling of tools, materials, components and equipment.</p> <ol style="list-style-type: none"> 2. Recognise hazards, understand risk assessment and take steps to control the risks to themselves and others. 3. Recognise information relating to legislation intended to protect the public. 4. Recognise symbols and signs relating to quality assurance endorsed by recognised authorities. 5. Use information to assess the immediate and cumulative risks. 6. Manage their environment to ensure the health and safety of themselves and others. 								
<p>Processes and Manufacture Systems and Control Procedures:</p> <ol style="list-style-type: none"> 1. Identify input, process, output and feedback in the production of a graphic product. 2. Draw up a logical order of work and know how this changes as the scale of production increases. 3. Produce a flow chart of a manufacturing system and show feedback. 4. Recognise the quality control marks and symbols used in the printing industry i.e. registration marks, colour bar and crop marks. 5. Understand the principles of 								

<p>simple mechanisms and identify the relevant components and features i.e. levers, linkages, audio/visual programmable ICs.</p>								
<p>Industrial Practices:</p> <ol style="list-style-type: none"> 1. Understand how the method of production changes from single to multiple production. 2. Demonstrate a sequence of making tasks that show how and when decisions are made. 3. Understand the importance of producing scale models and prototypes in product development. 4. Understand the different demands of different scales of production. 5. Have an awareness of 'just in time production' (JIT). 6. Understand how common graphical products are designed and manufactured. 7. Understand how and why quality checks are made in production. 8. Demonstrate an awareness of commercial printing and packaging methods; i.e. lithography, flexography, gravure, screen-printing and digital printing. 9. Match production method to best printing methods for a range of graphic products. 10. Know the four processing colours and understand special 								

<p>colours are also used.</p> <p>11. Understand print finishes used in printing, varnishing, laminating, embossing and foil application.</p> <p>12. Know how multiple surface developments (nets) are produced by the use of die cutting.</p> <p>13. Identify devices used to form shapes, position features and aid repetition.</p> <p>14. Demonstrate the reduction of waste and show economical use of materials.</p> <p>15. Understand the function and need for packaging: protection, need in transportation, storage, security, display, and giving consumer information.</p> <p>16. Have a knowledge and understanding that design ideas are protected in law through copyright, patents and registered designs.</p>								
--	--	--	--	--	--	--	--	--

Review of previous examinations: Examiner Comments from 2015 paper

General. The majority of candidates attempted all questions with varying degrees of success. A lot of time was spent on trying to interpret poor handwriting and spelling. A sharp pencil and a black fine writer pen would have increased the marks of some candidates!

Question 1 – Designing

- a) The majority of candidates were able to produce several initial ideas based on the design criteria but only a minority of candidates actually developed these ideas which meant that many candidates gained half marks or less for 'creativity and quality of development'. Notes were mainly descriptive. Most candidates indicated colour, some applied colour.
- b) Most attempted a 3D drawing but not many were able to do it well with flair. There were a number of candidates who produced 2D drawings and even orthographic drawings were attempted. The application of colour was mainly good block colour, few candidates attempted tonal shading.
- c) The biggest problem was that some candidates had not read the question and evaluated their toothbrush against all 3 design criteria. Overall evaluations were mainly descriptive as in previous years.
- d) A good knowledge of modelling materials and their uses. Styrofoam was the most popular response. Candidates are still using generic terms such as 'cheap, strong and light' far too often and achieving no reward.

Question 2 – Representing data.

Overall, question 2 was very well attempted and answered.

- a) Most candidates got either 2 or 4 marks. There was some confusion between histogram and bar chart.
- b) Answered well, though some candidates just said 'easy to read'.
- c) When candidates were familiar with pictographs they were done very well. Some drew bar charts with fruit inside each bar, had one large fruit, or a small fruit 'floating' at the correct percentage (%) line. It was common for the given scale (1 apple is 10%) to be ignored. Very few candidates wasted time by colouring the fruit.

Question 3 – 3D sketching

- a) It was obvious that some centres has covered this well, but generally most hadn't. Where candidates were familiar with single point perspective drawing this was done well. The majority of candidates did not know how to construct this, and isometric and two-point perspective were common. The depth and apex of the milk carton were often wrong. Line quality was often poor.
- b) Most candidates attempted this part of the question but few gained full marks.

Question 4 - Sustainability and recycling.

This was either, well written and comprehensive; addressing both advantages and disadvantages, or was very poorly written. Some candidates confused recycling with reusing or wrote about the 6 R's. Some got side tracked and wrote about job losses in the timber/oil industries and the destruction of wildlife and their habitat. Once again poor essay structure and grammar let some candidates down.

Question 5 – Scale of production.

There was very little understanding about the different scales of production. Answers were often vague, confused or repetitive.

Question 6 – Colour

- a) Most candidates had some understanding of primary and secondary colours. Some candidates got confused with the printing process colours.
- b) Most candidates were able to relate the meaning of the colour used, however not all related this to the sign shown in the example and therefore lost a mark.
- c) Quite well answered but many candidates lost marks by not justifying their comments or not giving an example. Some evidence of gender stereotyping with too much reference to 'blue for boys and pink for girls'.

Question 7 – Quality control and industrial processes.

- a) Many candidates didn't understand of JIT and there was lots of confusion here.
- b) Knowledge of the printing process marks seemed to vary from centre to centre. Many candidates were able to answer this well and picked up 9 marks.
- c) Generally well answered. Candidates understood that extra materials and processes added to the cost of production.

Question 8 – Equipment and stencils.

- a) & b) This question was generally answered well, although some responses were too generic to give a mark. For example 'keep away from young children or don't spray in your mouth'.
- c) Where candidates understood the idea of a stencil they were able to score well but often drawings were produced which were impractical as a

stencil.

d) Candidates displayed a poor understanding of a CAM process. The candidates mostly named equipment or computer software but failed to describe how they worked.