BOARD OF STUDIES
NEW SOUTH WALES

1996 HSC

EXAMINATION REPORT

Design and Technology

Including:

- **Marking criteria**
- **Sample responses**
- **Examiners' comments**

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HIGHER SCHOOL CERTIFICATE EXAMINATION

DESIGN AND TECHNOLOGY

ENHANCED EXAMINATION REPORT

Contents

DESIGN AND TECHNOLOGY

CANDIDATURE

2/3 Unit (Common) – 5020

3 Unit (Additional) – 561

NATURE OF COURSE

COURSE DESCRIPTION

SYLLABUS

2/3 Unit Design and Technology approved by the Board of Studies in 1992 for implementation in 1993 and initial examination in 1994. Amended in 1993 for the purpose of *Pathways*, and implemented in 1994 for initial examination in 1995.

The Design and Technology Syllabus includes a Preliminary 2/3 Unit (Common) Course, an HSC 2/3 Unit (Common) Course and a 3 Unit (Additional) Course.

The 2/3 Unit (Common) Course involves a Related Study, a Comparative Case Study, Design Projects and a Major Design Project.

The 3 Unit (Additional) Course involves a Core and a Specialised Study.

AIMS

This syllabus focuses on the study of technology and its applications through design in domestic, community, industrial and commercial settings in rural and/or urban environments.

It provides opportunities for candidates to:

- become enterprising, creative and adaptable
- develop the ability to design in response to human needs and wants
- develop attitudes and skills which will empower them to initiate and respond to change
- develop confidence and competence in the management and use of materials, tools, and techniques
- develop thinking and practical skills, and apply theoretical concepts to the realisation of practical solutions
- develop an understanding of a range of technological activities and their applications in a variety of enterprises

- develop a critical awareness and appreciation of the impact of current and emerging design and technology on the quality of life
- develop environmental and social responsibility in design, the use of technology and resource management.

COURSE CONTENT

Preliminary 2/3 Unit (Common) Course

The Preliminary 2/3 Unit (Common) Course includes the Related Study, the investigative component of the Comparative Case Study, Design Projects and a proposal for the Major Design Project.

The Preliminary Course is considered to be assumed knowledge for the HSC Course.

HSC 2/3 Unit (Common) Course

The **Related Study** is addressed in the HSC Course through the Comparative Case Study and the Major Design Project. It involves content acquired in various ways. It deals with designing and producing, using resources, management, communication, marketing, issues relating to organisations as well as social, environmental and other aspects of design and production. Learning experiences extend from school-based activities into the world beyond school.

The **Comparative Case Study** is made up of two components. The first component involves an investigation of two organisations, and is carried out in the Preliminary Course. The second component involves the comparison of the two organisations, and is carried out in the HSC Course.

The **Major Design Project** is a Design Project which is submitted for the Higher School Certificate Examination. A proposal for a Major Design Project is developed in the Preliminary 2/3 Unit (Common) Course. The Major Design Project is completed in the HSC 2/3 Unit (Common) Course.

LENGTH OF COURSE

120 (indicative) hours of school study.

HSC EXAMINATION FORMAT

- One written paper of 1 1/2 hours duration.
- The Major Design Project which includes the realisation of a product, a system or an environment and the documentation of all aspects of the development of the project.

COURSE CONTENT

3 Unit (Additional) Course

The 3 Unit (Additional) Course includes a Core and a Specialised Study.

In the Core candidates will investigate design and technology through a critical analysis of:

- innovation in design and technology
- success of innovation in design and technology
- entrepreneurial activity in design and technology.

The Specialised Study includes both the research and development of a concept related to the 2/3 Unit (Common) Major Design Project and the documentation of all steps involved in the process.

The Specialised Study will result in the development of ONE of the following options:

- an innovative application
- a new or improved resource
- a manufacturing system
- a marketing strategy.

The written documentation of the Specialised Study is submitted for the HSC Examination.

LENGTH OF COURSE

As for the 2/3 Unit Course plus 60 (indicative) hours of school study.

HSC EXAMINATION FORMAT

- One written paper of one hour duration.
- A Specialised Study which documents the research and development of an aspect of the 2/3 Unit (Common) Major Design Project.

PROCEDURES AND GUIDELINES FOR HSC MARKING

2/3 Unit (Common) Examination

The 2/3 Unit (Common) examination consists of TWO parts:

Part I — Written paper (40 marks)

Time allowed: 1 1/2 hours (plus 5 minutes' reading time)

The written paper is divided into THREE parts:

Section I (10 marks)

- In Section I, there are TEN multiple-choice questions.
- All questions are compulsory.
- All questions are of equal value.
- All questions are answered on the answer sheet provided.

Section II (15 marks)

- In Section II there is ONE structured short free-response question.
- The question is compulsory.
- The question is based on the Comparative Case Study and Related Study.
- The question is answered in the space provided in the examination paper.

Section III (15 marks)

- Section III consists of THREE structured extended free-response questions.
- Candidates attempt ONE question of the three.
- All three questions are of equal value.
- Each question is based on the Related Study and the Major Design Project.
- The question is answered in a separate writing booklet.

In Section I, the multiple-choice questions 1–10 in the 2/3 Unit (Common) paper is machine marked.

The Examination Committee presents a set of answers for the Supervisor of Marking to consider. A selection of Senior markers and Markers confirm the best answer for each question. The answers are then sent by the Supervisor of Marking to the Computer Section of the Board of Studies in order for candidate responses to be computer marked.

Candidates' responses and the most correct answers follow in this report.

In order to mark Section II and Section III of the 2/3 Unit (Common) written paper and the 3 Unit (Additional) written papers, HSC markers develop accepted responses and marking scales for each question. This is achieved through a process of discussion and pilot marking. The marking scales are developed to include all aspects of the question and provide for a full range of marks, from zero to full marks. Checklists are developed for each question to assist markers in awarding marks where candidates address each aspect of the question.

The marking schemes are contained in this report.

The free-response questions in the 2/3 Unit (Common) and 3 Unit (Additional) written papers are double marked. The second marker is unaware of the first mark. All questions are marked out of 20 and then scaled by computer to the final mark per question. If the discrepancy between the first and second mark is 6/20 or greater it is marked a third time.

Each marker keeps a tally of the marks he/she awards. These marker tallies are statistically examined each day and are used as a check, along with checkmarking by the Senior Markers to ensure accuracy of marking and a full ranking of candidates.

Part II — Major Design Project (60 marks)

Each candidate undertakes, on an individual basis, a Major Design Project for submission for the HSC. The Major Design Project includes the submission of:

- a product, system or environment
- a folio documenting the Project Proposal, Project Management, Project Development and Realisation, and Project Evaluation related to the designing and production of the product, system or environment.

The Major Design Project is marked itinerantly. HSC markers travel to schools or centres to which the project has been submitted. In cases where the project requires viewing or operation in situ, markers will travel to the candidate's home or a location at which the project has been set up for marking.

During late Term 3 pilot marking and HSC marking of each candidate's Major Design Project takes place. Pilot marking occurs over two nights and two days. Each HSC Major Design Project marker is trained to mark all types of projects according to the marking criteria as set out in the *HSC Subject Manual No 6*. Regardless of expertise or background each marker is trained to mark the full range of projects and technologies presented.

Prior to pilot marking the Senior Markers mark the projects at the pilot marking centre and develop benchmarks for each of the projects used to train markers. Each marking team (of 2 markers) marks 4 to 5 projects each session and discuss marks between themselves and Senior Markers. Each marker is supplied with a checklist devised from the marking criteria set out in the *HSC Subject Manual No 6* to assist in ensuring that each candidate covers the criteria of the Major Design Project.

The checklist used to assist the markers is contained in this report.

Each marker is continually checkmarked by Senior Markers and adjusts his/her marking until the whole group of markers is consistent in its approach and awarding of marks.

Each marker pilot-marks and discusses approximately 25 projects before they arrive at the first centre/school for marking. During the course of marking each team is checkmarked a minimum of 4 more times by Senior Markers to ensure uniformity in marking.

Markers are trained to mark and apply the marking criteria to any project presented. Evidence from the last three years of pilot marking and HSC marking has shown that markers from a practical background can be trained to mark according to the criteria and be very accurate and consistent.

Candidates' Major Design Projects are double marked with frequent checkmarking by Senior Markers. To maintain uniformity and consistency the discrepancy is much tighter than that used in marking the written paper. If the mark difference between the first and second mark of the marking team is 7 or greater out of 60 for the candidate's Project, markers discuss and mark again. If the discrepancy still cannot be resolved a Senior Marker is contacted for a third mark to be completed.

3 Unit (Additional) Examination

The examination consists of TWO parts:

Part I — Written paper (20 marks)

Time allowed: 1 hour (plus 5 minutes' reading time)

The written paper consists of TWO sections:

Section I (12 marks)

- There is ONE compulsory extended free-response question drawn from the Core.
- The question may involve candidate response to stimulus material.
- The question is to be answered in a separate writing booklet.

Section II (8 marks)

- There are THREE structured short free-response questions.
- Candidates attempt ONE of the three questions only.
- All the questions are of equal value.
- The questions are based on the Core.
- The question is answered in a separate writing booklet.

As with the 2/3 Unit free-response questions, the HSC markers develop accepted responses and marking scales for each 3 Unit question. All candidate responses are double marked. The second marker is unaware of the first mark. All questions are marked out of 20 and then scaled by computer to the final mark per question. If the discrepancy between the first and second mark is 6/20 or greater it is marked a third time.

Part II — Specialised Study (30 marks)

The Specialised Study is sent to the Board and is marked at the same time as the written paper is marked in December.

Marking is kept precisely to the marking criteria as set out in the *HSC Subject Manual No 6.*

Each report is marked by two teams of two markers. The first team marks as individuals and arrives at a common mark. The second team, unaware of the first team's mark, goes through the same process. If the first and second marks differed by 6/30, it is considered discrepant and requires a third mark, by a third marking team.

When markers consider a study to be excessive in length it is given to a Senior Marker who carries out an accurate word count. The supporting materials, 2/3 Unit Major Design Project folio extracts, maps, charts, drawings, computer printouts, video or

audio tapes are not included in any word count. Only words relating to the study itself are counted. If the study is substantially over 2000 words, the study is marked according to the criteria and then reduced by up to 20% of that mark.

Less than 10% of Specialised Studies were considered to be excessive in length in the 1996 HSC. However, many of these studies were as long as 5000 words. It was considered by markers, Senior Markers and the Supervisor of Marking that candidates who exceeded the word limit were advantaging themselves over a candidate who had abided by the rules in the *HSC Subject Manual No 6* and kept to the word limit.

It is reiterated that candidates must keep to the word limit of 2000 words.

Clerical Procedures for HSC Written Paper Marking

All candidates' scripts are kept in bundles according to each Examination Centre. Strict confidentiality is maintained at all times. Scripts are distributed to, and collected from, markers by the Senior Markers only. Senior Markers ensure that a marker does not get papers from his/her school to mark. It is not permitted for markers to find out the names of schools they have marked.

Markers do not record any marks on the scripts. They complete the mark on the marksheet which accompanies each bundle of scripts. After the first mark the marksheet is removed and a second blank marksheet is put on the bundle ready for the second mark. Both first and second marks are completed independently.

2/3 UNIT (COMMON) EXAMINATION

Section I (10 marks)

QUESTION 1 54% of candidates correctly chose D

Design for disassembly assists in relation to sustainability of resource management and community perceptions about the earth's resource depletion.

QUESTION 2 26% of candidates correctly chose A

Working effectively with relevant organisations (eg manufacturers, engineers, builders, environmental groups, etc) requires a knowledge of tools, materials, techniques to cater for their respective requirements.

QUESTION 3 79% of candidates correctly chose B

The prototype is the first working model which allows testing to occur in real situations.

QUESTION 4 56% of candidates correctly chose A

Management is by definition primarily concerned with improving efficiency and effectiveness.

QUESTION 5 67% of candidates correctly chose C

The first consideration for a company would be to redesign the product rather than waste development money already invested.

QUESTION 6 26% of candidates correctly chose C

The best long-term solution is most likely to eventuate after thorough investigation and implementation by a health and safety officer.

QUESTION 7 58% of candidates correctly chose D

Community-operated recycling centres (and the general public) need assistance in identifying and separating materials.

QUESTION 8 36% of candidates correctly chose C

In any commercial activity it is important to establish objectives or goals at the outset.

QUESTION 9 47% of candidates correctly chose B

Workers with increased participation in decisions which relate to their own productivity will be more interested and responsible.

QUESTION 10 47% of candidates correctly chose B

The combined popularity of dexterity games for both girls and boys can be identified as the largest target market.

General Comment

Multiple-choice questions require careful reading and reflection before an answer is given. Candidates are reminded that they are to 'select the alternative A, B, C, or D that best answers the question'.

Section II (15 marks)

QUESTION 11

This question was compulsory.

The question was to be answered in the spaces provided in the examination paper.

In Question 11 the marking scale provided for up to 20 marks to be awarded which were converted to a final mark out of 15.

Suggested answers and marking scale

Name TWO organisations with contrasting structures. State the location of each organisation and the products and/or services that each provides.

Organisation 1

These responses do not attract marks but are used to validate answers later in the question.

Name ..... Morton Industries

Location ..... Jonesville

Products and/or services ..... Fabric Design / Manufacture

Organisation 2

Name ..... Smiths & Co.

Location ..... Saratown

Products and/or services ..... Signwriting

(a) Describe what impact the location of each organisation has on its operation.

Responses could include locations affected by government incentives, transport, resources, markets, rent, labour supply etc.

Organisation 1

1 mark for description of location and effect on organisation

1/2 mark for effect only.

Organisation 2

1 mark for description of location and effect on organisation

1/2 mark for effect only.

(b) (i) Compare the structure of the two organisations. Labelled diagrams may be used. Responses could include structure of management, physical environment or workforce.

1 mark for each structure of each organisation

1 mark for a comparison direct or inferred by examples or labelled diagrams.

(ii) Explain how the structures of the two organisations relate to their levels of operation.

Answer should address how sales and workforce size relate to the structure of the organisation. ie type of organisation, size of organisation and productivity.

1 mark for each organisation.

(c) Choose ONE organisation. Suggest THREE areas of policy that should be addressed to support the introduction of a new technology.

Answers must be POLICY areas, eg OH/S, staff training, environmental, QA, IR etc.

Examples of activities within policies 1/2 mark each.

(i) 1 mark

(ii) 1 mark

(iii) 1 mark

(d) Choose ONE of the organisations that you have nominated. Assess the impact of the work environment on the morale and comfort of personnel. Use examples in your answer.

Responses could include noise, lighting, unfriendly, clean, dirty etc and say that they cause good/poor morale and comfort.

1 mark for each example.

1 mark for overall effect on the organisation.

(e) For the TWO organisations, compare the management practices that are used to maximise the safety of employees.

Responses should relate to actions by management and could include staff training, OH/S policy, incentive schemes, maintenance programs etc.

NOTE: a list of safety equipment was not acceptable.

1 mark for each practice at each organisation.

1 mark for a comparison direct or inferred by examples.

(f) (i) For the TWO organisations identified, contrast how procedures are used to ensure quality.

Responses could include random checking, TQM practices, customer feedback surveys etc.

1 mark for a procedure at each organisation.

Contrast can be inferred and procedures could be similar if described and noted as such.

(ii) For ONE of the organisations, suggest how quality procedures may be improved.

Responses could include introduction of any quality procedure not mentioned for the organisation above, eg TQM practices, customer surveys, taste tests etc.

1 mark for an activity at one organisation.

1 mark for expanding on the reasons.

Markers' Comments

Most candidates were able to identify two organisations and state the location and goods/services provided. It was shown later in the question that a few candidates did not choose organisations with sufficiently contrasting structures to adequately make responses to some parts of the question.

(a) This was well done by most candidates with a good understanding of the reasoning behind the location of each organisation.

A typical good response was:

The location of … steelworks at Port Kembla has significant advantages as … is in an industrial area having access to trains and deep sea ports ...

A typical misinterpretation did not link and/or mention the impact of the location to the organisation operation. For example:

... it brings a lot more people to the shop.

(b) (i) This part was well answered, with most candidates able to show an understanding of the organisations' structure. Some candidates did not obviously make a comparison which made it difficult to allocate marks for this part.

A typical good response was:

... is part of the larger … company. It has a complex vertical organisation structure with many different departments and managers. … is a smaller company with a horizontal organisation structure which allows better communication and employee input.

A typical misinterpretation was:

… Was built of brick and … was built of timber.

(ii) This part was poorly done with few candidates showing an understanding of the levels of operation of the organisations studied. Many candidates considered management positions within the organisation only.

A typical good response was:

Because … doesn't have a large market it doesn't require division managers and has few employees. At … they have large sales and has many employees which requires section managers, supervisors and general managers to control the large scale business.

A typical misinterpretation was:

Both organisations work for a profit … with workers under strict regulations for both companies.

(c) Few candidates were able to state policy areas within an organisation and simply used specific activities within policy areas in their responses.

A typical good response was:

Occupational Health & Safety — for safety factors. Human Resource Policy for impact on employment. Environmental policy — for impact on local ecology.

A typical poor response was:

Capture gases released to the air. Noisy machinery. Always be polite to customers.

(d) This part was well attempted by most candidates. Good examples of work environment were used and effects on the personnel both positive and negative were well detailed.

A typical good response was:

... being a Die Cast metal producer, worker comfort and morale was low, eg The melting of metals made it very hot for workers, the noise of machines affected workers hearing and the cleanliness caused safety problems.

A typical misinterpretation was:

... carpet cleaning steam clean your carpets while you are on site. While they are doing their job they will have a little chat with you to make you feel safe and secure.

(e) Most candidates answered this part quite well, however, few candidates made obvious written comparisons between the safety practices of each organisation.

A typical good response was:

At … the management set up a Health and Safety department … and set stringent guidelines for safety equipment to be worn. At … on the other hand when the outlet was built an O.H.&S. expert was consulted to ensure the shop front was safe for customers and employees.

A typical misunderstanding simply listed safety equipment worn by workers instead of recognising the management practice which caused it to happen. For example:

Safety goggles, Ear muffs, Dust masks.

(f) (i) Responses to this part were fair with many candidates simply saying TQM without expanding on procedures within the organisation. A few candidates had difficulty in contrasting procedures when both organisations appeared to do the same. Some differences in procedures should have been noted.

A typical good response was:

At … Fully automated machinery has been installed with built-in quality control which automatically switches off, or alarms when there is a break in quality control limits. On the other hand at … works checked by workers producing the work … with networking being undertaken at every stage of production to ensure the brief is fulfilled.

A typical poor response was :

At … the quality was high … wash your tanker after refilling.

Or:

Both companies use TQM.

(ii) This part was reasonably well answered with most candidates recognising some area in which quality procedures could be improved.

A typical good response was:

At … TQM is an in-house project … By seeking a Quality Assurance certification general quality in production would increase.

A typical poor response restated procedures mentioned in (f) (i) or again simply stated examples without any further comment.

Section III (15 marks)

All questions were of equal value.

Candidates were to answer ONE whole question from questions 12, 13 OR 14.

Candidates answered the question in one or more separate writing booklets.

The questions were initially marked out of 20, which was converted to a final mark out of 15.

General Comments

Each question attracted approximately equal numbers of candidates.

Some candidates attempted TWO or MORE of the questions in this part (ie question 12 AND 13 AND 14). When this occurred, each response was marked according to normal double marking procedures and the candidate awarded the best mark. However, candidates who attempted more than one question (either through ignorance or design) usually performed less well than candidates who followed the examination instructions and concentrated on one question.

It is disturbing to note that a small number of candidates misinterpret the instructions and only attempt one PART of one question from either Question 12, 13 or 14, eg Question 12 part b, rather than attempting the whole of Question 12. This is indicative of poor examination preparation. These candidates put themselves at a severe disadvantage.

QUESTION 12

Marking scale and suggested responses

For any product, system or environment, a range of factors influence the selection of production techniques or production process.

For a school project you have developed:

(a) (i) name the project, and identify a technique or process used during its production or realisation. (3 marks)

Project — any project mentioned (1 mark)

Technique or process — can include designing or an aspect of designing such as researching, sketching, drawing etc. Setting out, cutting, assembly process or technique and finishing. (2 marks)

For example:

For my Major Design Project I designed and produced a range of children's clothing suitable for children between the ages of 3–5. One of the techniques I utilised to complete the design was screen printing motifs onto multi-coloured T-shirts. To complete this technique successfully I was required to transfer the selected design onto a silk screen blocking out areas that required a particular colour. I then placed the screen onto the T-shirt fabric and applied the first block of colour using a special fabric paint. A squeegee was used to push the paint through the screen onto the T-shirt. When this coat had dried, the design was blocked out in a different area and another colour was applied. This was repeated until the design was complete. The design was then heat set using an iron.

(ii) explain the factors that should be considered when selecting the technique or process nominated in (i). (8 marks)

To gain full marks the candidate needs to recognise two factors that are relevant to the technique or process mentioned in (i). If the candidate has not identified a technique or process in (i), then half marks are to be awarded to this section. One mark is gained for naming the factor. A further three marks are gained for the explanation in relation to the technique or process.

Factors that might be included are availability of materials or equipment, cost, environmental impact, safety issues, design features, level of skill, design process or aspects of this and quality.

For example:

For the technique of screen printing the following factors needed to be considered:

- *skill — as I had not attempted this technique before, I needed to consider whether I would be able to learn it sufficiently to produce a quality product. Also, did my teachers have the knowledge and skill to show me how to complete the screen printing process.*
- *cost — as I was working within a limited budget, I needed to consider the cost of screen printing materials and if this cost was greater than I had allowed for.*
- *availability of equipment — the school would need to have the necessary equipment available for me to use, or else I would have to purchase my own. This would also influence my budget. The equipment I needed included silk screens and a squeegee.*
- *environmental impact — the printing paste should be reusable after the initial screen, to reduce costs and to prevent damage to our environment through increasing chemical waste.*

(b) Assess how the commercial or industrial development of a similar project would influence the selection of this technique or process. (5 marks)

One mark is gained if the candidate relates their discussion to part (a). That is, if they use a similar project, technique or process.

Candidates must then name and assess at least two factors that would influence the commercial or industrial development. These factors might include cost of production, industrial equipment and processes, speed and efficiency of equipment, the need for mass production, occupational health and safety issues, technique or process user friendliness, production line, a design process including components such as market research, costing and testing, management of process such as TQM.

One mark is gained for naming each relevant factor, a further mark is gained for the candidates, assessment of this factor in relation to the industrial or commercial setting.

For example:

For my T-shirts to be screen printed commercially a number of areas would need to be evaluated. Firstly as screen printing the shirts individually is a very time consuming process a different method of application would need to be considered to improve the rate of production, for example a rotary screen printing machine.

This machine would increase the amount of T-shirts that could be produced within a set amount of time thereby improving production rates. As this machine is not as labour intensive as a single screen print the company would also save money by being able to minimise the number of employees required to produce the T-shirts.

The employees would need to be given training in safety issues regarding the operation of the machine to ensure that accidents do not occur during the manufacturing process.

The company would also have to ensure that a high quality product is maintained and may need to adopt a quality control process so that the design is consistent in colour and features.

(c) Discuss the ways in which the introduction of new technologies influences the skills required by workers in the production of products, systems and/or environments. (4 marks)

Candidates must provide at least two different influences to gain full marks. One mark is awarded for the naming of an appropriate influence and another mark is awarded for the discussion or an example provided in relation to that point.

Influences that might be discussed include skill redundancy (not worker redundancy), retraining programs to improve or modify skills, multi-skilling, change in management skills, flexibility, teaming, reduction in skill specialisation, change in interpersonal skills as a result of retraining, improved computer literacy skills etc.

For example:

Within the workplace today changes in technology have meant that workers are required to become more flexible and be prepared to adapt to changing practices. For example, at Coca Cola Amatil Northmead, all production workers are trained to operate all aspects of the production process. This includes driving the forklift. Instead of workers being trained in one area of production they are multi skilled. This improves employee motivation and also maintains production rates during employee absences as people can move from one task to another.

In many establishments people are now required to be computer literate as the production process is quite often maintained by computer programs. Staff who previously have operated a piece of machinery may now find that their previous skills have become redundant, and as a result are required to retrain to learn how to operate the relevant computer program which runs the machinery.

Markers' Comments

When candidates interpreted the question clearly it was answered well. However, many candidates did not understand the terminology (eg assess) and as a result did not respond well.

In part (a) candidates tended to discuss a whole design process rather than nominating a specific process or technique. As a result, responses to (ii) were often vague and unsupported. Factors mentioned were often not related to the technique or process mentioned in (i).

In part (b) many candidates had difficulty relating their chosen project to the industrial/commercial setting. Some provided substantial information, but did not relate it clearly to part (a). Generally a little knowledge was evident of industrial processes and/or techniques.

Part (c) was reasonably answered, however, many candidates tended to focus upon lost jobs and redundancy rather than the impact of technology upon workers' skills. Better candidates were able to include discussion of retraining and multi-skilling together with changing attitudes to work practice.

Example of a poor response

(a) (i) Architectural designed house, throughout this project a great deal of design and idea was needed to develop plans.

(ii) Why to choose this design and ideas over a similar one, you have to decide what design or idea would best suit the environment and the clients needs and need of the design or idea itself.

(b) No matter what project, system or environment is being made, the design process plays a major part in its success. Especially in house designing there are so many factors that come together to give the house success or failure.

(c) In house plans there are great new technologies that aid the architect to produce a accurate and presentational piece of work. This technology is the Computer Aided Design program. This program is now being used throughout the world not just for architectural drawings and plans, but also for builders, car manufacturers, in fact most things that need designing or plans, use the computer aided design program. But still its main market is with architects to aid them with drawings, therefore the architects skill is not lessened but increased as the use of computers is needed as well, but the use of this program speeds up the amount of time it takes to produce plans, so this enables the architect to produce more plans.

Markers' Comments

This response is worth 4–6 marks out of 20.

(a) Not enough detail. No technique or process clearly identified and as a result, the response to part (ii) is not relevant to the question.

(b) No reference to commercial or industrial development. Influences not clearly defined.

(c) Brief mention of CAD technology upon the skills of the architect. Insufficient information and detail.

Example of an average response

(a) (i) The product which was created was a back end of a Volkswagen Beetle which was cut and made into a sofa using existing wheels and seat positions.

There were many techniques and processes used during its production. Many metal working skills were used in its construction. One of the major techniques in production was MIG welding when constructing a sub-frame and the capping of sills and channels on the car.

(ii) There were factors which had to be taken into account if this technique was to be used. Can you weld metal? It so happens that it is one of the most effective ways of joining metal together. Will it effect its appearance? All welds were out of view. How durable will it be? Will it do the job? These were factors that were taken into account.

(b) This technique would be ideal for commercial use. Spot welding has revolutionised car manufacture over the years. Influences which could effect it being used in commercial or industrial areas would be cost and large companies look at economical ways of doing things.

(c) Multi-skilling is now becoming more and more common. Workers can find themselves performing more than one task and this can be appealing for organisations having to employ less people. Multi-skilling is beneficial and workers can enjoy new areas of production and techniques.

The advantage where one person has a specific task is that he becomes very good at it, where as someone who performs many tasks his skill is spread more evenly.

Markers' Comments

This response is worth 11–13 marks.

(a) (i) A clear description of the product and process, using appropriate terminology.

(ii) Identifies factors, but explanation is poor.

(b) Recognised a similar project, but response is too general. Needed to assess the possible technologies that would be used by a commercial company, in the production of a product.

(c) A limited response. Other issues needed to be addressed such as retraining and teaming.

Example of an excellent response

(a) (i) The project involved designing and producing a wedding gown for a bride.

A process used during its production involved the sewing/construction of the actual garment. That is, the process/technique of transforming the cut fabric pieces into an actual bridal garment. Thus, the technique of sewing the garment together.

(ii) There are a number of factors that should be considered when selecting the technique/process of sewing the bridal garment together:

- *In determining what skills are required, it is necessary to assess what training may be required to learn how to perform such a technique or process.*
- *The raw materials being used — The materials to be used need to be assessed in relation to the technique being used.*
- *The appropriateness of the technique to the overall project or brief — ie One would have to assess the appropriateness of using a sewing machine to produce the garment.*

- *Safety — Safety would need to be considered when selecting a particular technique — in this case the safety requirements of a sewing machine. If one was unable to safely use a sewing machine, then there would be no use in using a sewing machine to perform the task of constructing a garment.*
- *The availability of the technique, ie the availability of a sewing machine would have to be considered when selecting a technique or process to use in developing the garment.*
- *The cost of the process/technique — would have to be examined. If sufficient funds were not available to either buy or hire a sewing machine, then there would be no use in using a sewing machine to construct the garment.*

(b) If a similar project was to be developed industrially or commercially, the section of this technique would depend on:

- *Whether the technique suited the product in its final usage — in terms of its target market. The technique/process of the use of a sewing machine to construct a garment would have to be assessed through testing and the development of prototypes. If the sewing machine used did not produce a quality product for the full range of the target market, then obviously the product would not sell; and thus other processes/techniques would have to be implemented.*
- *The finances available — will be a factor to consider when selecting the technique. Obviously, commercial development would mean a greater target market and therefore the need for high initial start-up costs. Finances would have to be assessed according to what techniques could be employed, especially in the case of purchasing capital equipment, ie sewing machines.*
- *Availability of capital equipment — would have to be considered. If the product was being commercially produced, the producer would have to assess whether certain capital equipment, ie sewing machines, were available, or whether they would have to be purchased. If capital did exist, then it would have to be assessed according to safety and the tasks it could perform. This could involve upgrading of capital or repairs to existing machinery (ie sewing machines).*
- *Availability of trained employees — The availability of trained employees would have to be assessed according to whether they did exist, or whether they could be trained to perform in the construction technique of producing bridal garments. The commercial development of bridal gowns would clearly involve the employment of a number of workers, and for this reason employees would have to be assessed according to their ability to reliably perform the sewing/construction technique, as well as their cost.*
- *The capacity of an organisation to perform such a development — would have to be assessed in terms of available physical space to perform sewing/construction processes in safety, as well as the capacity of an organisation as a whole to take on the commercial development of bridal gowns.*

(c) With the introduction of new technologies, it is clear that the skills required by workers to produce such products, systems and environments will change.

New technologies are usually employed through the introduction of more modern processes of doing things much of the time, and increasingly so in manufacturing processes today such new technologies involve the use of more automated, computerised procedures.

This being the case, the skills required by workers increase, and thus workers find the need to change the skills they acquired in the past with more highly skilled processes. This may mean the necessity to be retrained or be re-educated through training and new courses.

New technologies mean that the worker must learn new skills and change their old skills. Also, the introduction of new technologies means that workers must change their skills in relation to their working environment. New technologies may mean the need for less labour intensive skills, and instead — more computer-oriented skills. This would to therefore require re-training. (New technologies could mean de-skilling of workers.)

The introduction of new technologies would also mean that workers would have to learn to be more flexible — in relation to the changing nature of the new technologies being employed during production.

Often, the introduction of new technologies may mean that humans are no longer required to perform a certain task, and in this case, a worker's skills would change drastically. New skills would be required — skills that could involve role changes within the workplace, more flexible skills, that could be used in other areas of production.

Thus, workers would have to be prepared to adjust and restructure their work skills, with new, more flexible and efficient one.

Markers' Comments

This response is worth 18–20 marks.

(a) (i) Names project clearly. Identifies a process, however could be more specific, eg a type of seam used on the garment.

(ii) Identifies all required factors with well-explained examples.

(b) Recognises a similar project. Provides names of processes and techniques with good assessment of the commercial setting.

(c) Excellent discussion of the skills required by workers in relation to new technology. Completes the answer with sound examples.

QUESTION 13

Marking scale

(a) Study the diagram on page 10. List the issues and concerns that you would need to consider before planning the development.

5 Marks 1/2 mark for each issue.

1/2 mark for each concern (qualifier).

(Relevance is before planning.) For example:

Traffic: The speed is too great for the types of people accessing the proposed area.

Environmental concerns: The impact on the existing native animals.

Cost: Is the community getting value for money?

(b) Propose initial design ideas for the site, including bushland, landfill site, and traffic areas. Indicate how this layout, position of facilities, and landscaping of the area will facilitate use by different community groups.

3 Marks The diagram/answer must indicate ideas for:

1 mark for bushland

1 mark for landfill site

1 mark for traffic areas.

6 Marks Facilitating community use:

2 marks for layout with respect to any 2 community groups

2 marks for position of facilities with respect to any 2 community groups

2 marks for landscape with respect to any 2 community groups.

(The answer must be stated not implied.)

(c) Indicate how THREE key features of your design in part (b) address the issues and concerns you have identified in part (a).

3 Marks 1 mark for each key feature of the design that solves issues and concerns in part (a).

(d) Compare and contrast the methods of evaluation of your major design project with methods of evaluation appropriate to this design proposal.

3 Marks 1 mark for each method of evaluation similar and/or different.

DESIGN & TECHNOLOGY 2/3 UNIT Question 13 Table No:___ Date:_____ Page No:__

a)	b)									c)	d)			
Issues & concerns	Initial Design Ideas			Layout		Facilities		Landscaping		Key Features	Evaluation			
1 mk each 5 marks	bushland 1	landfill 1	traffic 1	Group 1	2	Group 1	2	Group 1	2	1 mk each 3 marks	3 marks	Total	Centre	Candidate

Markers' Comments

Overall this question was answered by a little less than one-third of the candidates.

Part (a)

Most candidates were able to develop a satisfactory answer to part (a), being able to relate issues to the site plan. Many candidates, however, only listed a few concerns rather than a wide range of the apparent concerns available. A lot of candidates had difficulty in listing both the issues and concerns and relating them to the development site as requested.

Portions of some of the candidates' better responses included:

- *The areas speed limit as many people will be around if it becomes a recreation area*
- *How to combine the bushland into the recreation area without destroying the bushland.*
- *Cost detailed finance analysis should take place. How much will it cost to the residents.*
- *Since the site is surrounded by residential areas and a retirement village the noise coming from the area should be kept to a minimum.*
- *Does the land fill contain any toxic wastes or anything else that could be harmful to humans?*

Poorer responses identified broad issues like toxins, environment, residents, without clarifying their relationship to the site plan.

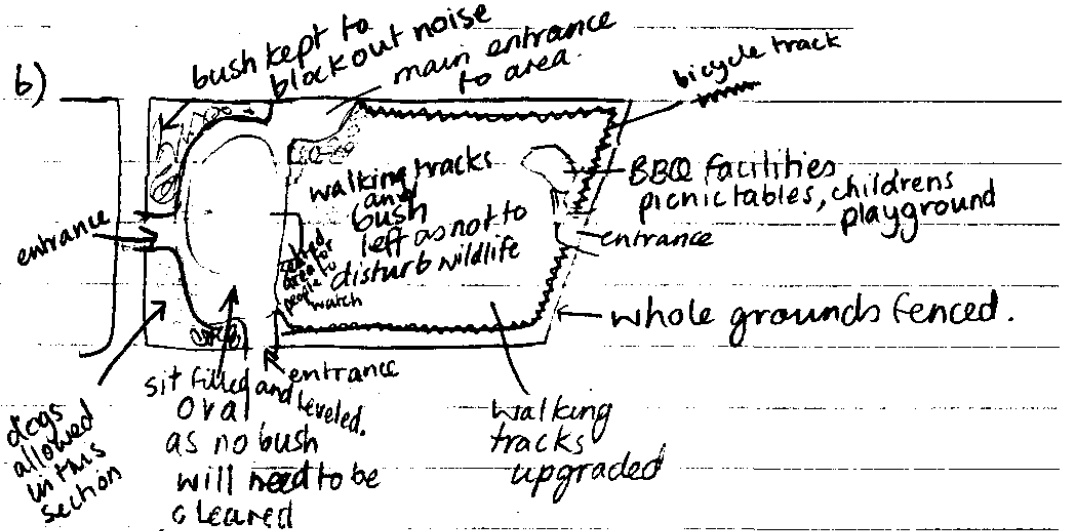
Part (b)

Candidates had a good depth of knowledge of this particular section with many wide and varied concepts being developed.

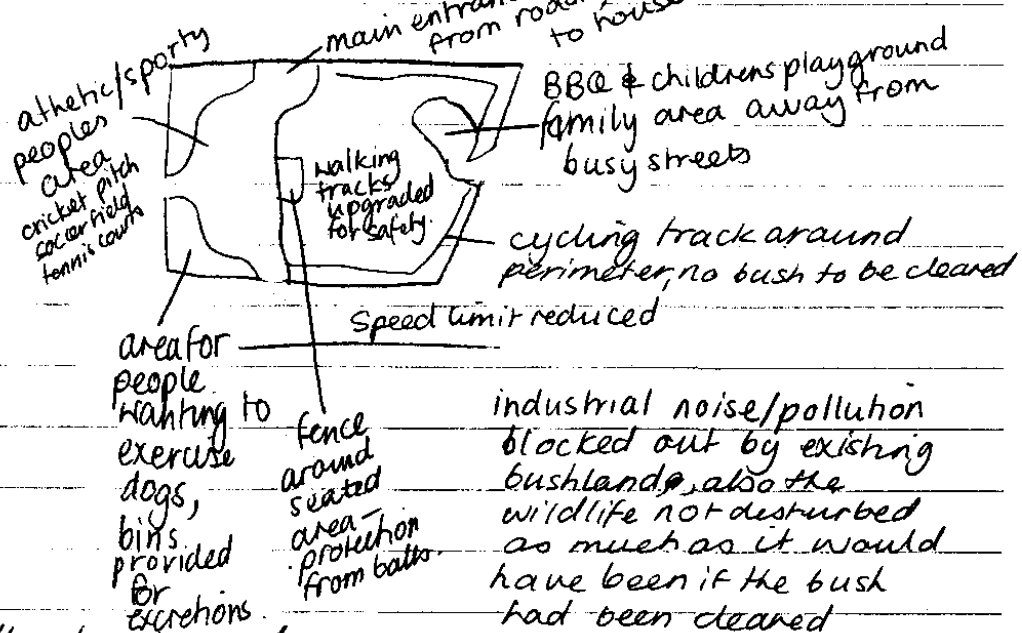
The first section dealt with the initial ideas that the candidates were asked to express.

Candidates who scored well for this section used both diagrams and written responses to further develop their ideas. Many candidates only partly labelled their diagram and in many cases did not go on to further enforce the purposes of the positioning of the features.

The responses following are examples of those where features were clearly identified with appropriate labels and clarification.



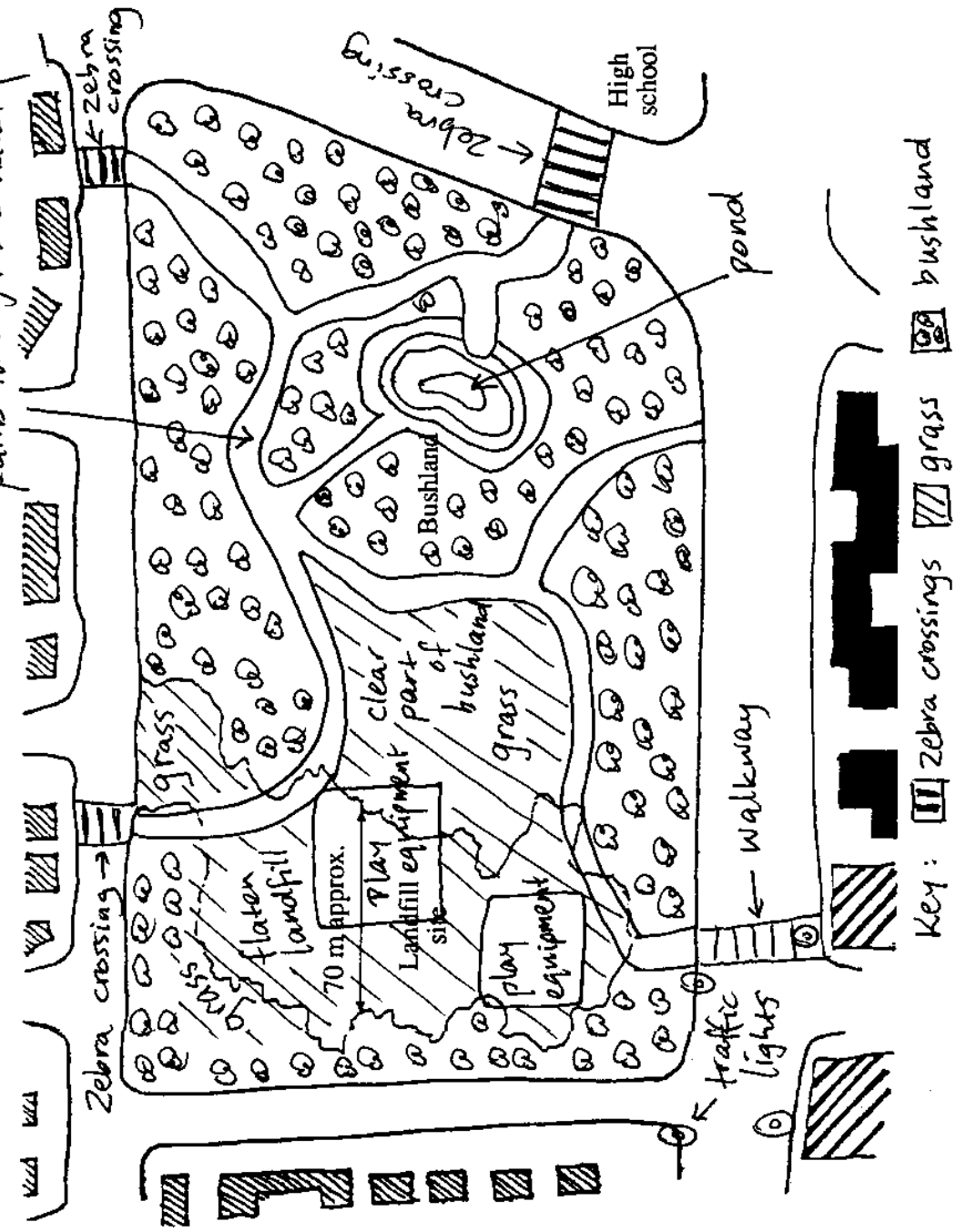
Birds eye view pictures



industrial noise/pollution blocked out by existing bushland, also the wildlife not disturbed as much as it would have been if the bush had been cleared bins placed around the park for less pollution, bubblers also.

the length and the width of the cleared bit has allowed for less clearing of the bush and environment protection

WORKSHEET AREA 'A' AND BUSHLAND



The second section of this part dealt with the development in relation to the intended community groups that will be using it. For this part candidates found it easy to identify the layout, position of facilities, and the landscaping but had difficulty in relating these aspects of their design to the intended community groups.

Portions of some of the candidates' better responses included:

– *Traffic lights put outside the high school for their ease of crossing.*

– *Car park close to the picnic and BBQ areas for family convenience.*

– *Toilets with disabled facilities.*

– *Skate board ramp for the teenagers to use.*

– *Landscaping suitable for use with wedding photos.*

– *Walking tracks for the residents of the retirement village so they can enjoy the bush setting.*

Part (c)

This part of the question was generally well answered particularly if part (a) was expressed well. However, some candidates appeared to misread the question giving the key features but then failing to go on to address the issues and concerns that related to them.

Portions of some of the candidates' better responses included:

– *In part (a) one concern would be if disabled children could use this play area. Yes they can. Specialised equipment would be in the playing area.*

– *Playground in picnic area so small kids can play while their parents relax, on the many benches, or cooking lunch on one of the barbeques.*

– *Speed bumps to slow the speeding traffic.*

Part (d)

Generally this part was poorly answered in comparison to the rest of the question.

If candidates did attempt this part then they did not clearly understand what was required of them. Candidates tended to ignore the compare and contrast component of the question and often misunderstood the word 'method'. Of the candidates that did attempt this question many just answered it in general terms about their Major Design Projects.

Portions of some of the candidates' better responses included:

– *For my major design project I made three models for my initial design ideas. I gave them to different people and got the to fill out a sheet of questions. This park idea could be evaluated by giving the community models and each suggested ideas. They could give comments and suggestions.*

– *A survey and questionnaire would reach a wide range of people and get a good cross section of the community.*

QUESTION 14

Candidates were marked out of 20 according to the marking scheme devised in response to the question and arrived at as a result of pilot marking a number of candidate responses.

In marking the question, markers were asked to:

- Skim read the candidate's response to get an overall impression of the answer.
- Identify the focus of part (b) — either a young child or a visually impaired person.
- Use the marking checksheet to examine candidates' responses for the various sections.

Markers were reminded that:

- At all times throughout the marking of a paper endeavour to award marks not deduct.
- Candidate responses will vary from a regimented a (i), (ii), (iii), b (i) etc to an essay style response. For all responses, regardless of style, markers are to use the marking checklist to compile marks throughout the entire candidate response.

Marking scheme and suggested answers

Part (a) 9 Marks

(a) (i) Forms of communication used in Design and Production.

- Verbal — brainstorming, conferencing, conversation, briefing, interviewing, surveys …
- Visual — TV, video, charts, sketches, diagrams, text, models, prototypes …
- Electronic — CAD, animation, Internet, phone, fax, virtual reality, holograms, modem, E Mails, PA …

Any three 'different' types earns 1 mark each for a total of 3 marks:

eg Phone, charts, models = 3 marks

eg Mobile phone, phone, CAD = 2 marks.

(a) (ii) Criteria for evaluating the success of ANY method of communication.

A 'communication' has been successful if all of the following components have been successful.

1. Was the information prepared into a meaningful and appropriate form?
2. Was the 'form' transmitted to the receiver?
3. Was the transmitted information received?
4. Was the received information comprehended?
5. Did the sender receive a response?

A candidate needed identify three (3) of these to obtain 3 marks — 1 mark each.

(a) (iii) MUST relate to a project not a form of communication only.

- A form of communication must be identified and points made to support how effective/successful it was when used for a project.

eg Sketches were used and successful because it showed the development of and the modifications made to my bar stool whilst I was making it.

eg CAD was used for making working drawings because this gave accurate information for cutting lists.

eg A video was used to show the different types of stools as part of my research and the place at home that my bar stool sits.

Three forms needed to be identified and explained to obtain 3 x 1 mark.

Part (b) 11 Marks

Candidate needed to state/indicate the user — young child or visually impaired person. No marks for this statement.

(i) Identification of criteria to use when marking design modification decisions.

Child:

- lightweight
- ergonomic handle/s for age
- appropriate pouring pattern
- impact resistant material.

Visually impaired person:

- Highly stable
- insulated — heat risk
- ergonomic handle for ease of grasp.

Three criteria must be identified to obtain 1 mark each.

Total 3 marks.

(ii) Two modifications need to be described. The new design must be described as different from the original sketch in the examination paper. 1/2 mark for each description. Total 1 mark. Naming a modification only without a description is not acceptable, eg ‘handle’ received no marks.

The candidate then needs to discuss why each modification is important and appropriate for the user. If the modification is not appropriate for the end user then no marks were awarded. 1 mark each for discussion. Total 2 marks.

(iii) The sketch/s should convey the ideas described in part (ii). 2 ideas — 1 mark each. A good attempt at a ‘pictorial’ or ‘orthographic’ sketch (at least 2 different views) is required. A ‘thumbnail’ squiggle can gain only 1 mark.

- Features not described in part (ii) CANNOT be awarded marks if they ‘appear’ in the sketch.

(iv) The candidate should suggest an appropriate medium, eg posters, billboard, TV, radio, etc and propose a likely content of the presentation.

The suggestion needs to target the clientele — child or visually impaired person.

1 mark for suggesting an appropriate medium and content.

For 2 additional marks the candidate must:

– justify by saying why this method is suitable to sell this NEW product to the consumer.

The design modifications should feature in the strategy/presentation.

2 marks for the clarity and thoroughness of the justification.

1 mark only for justifying the medium only. Second mark if modifications are included in the overall package.

QUESTION 14

Table No________ Date _________ Checklist No _________

			a (i) 3 forms of communication			a (ii) 3 criteria for evaluation			a (iii) Analyse forms in project of criteria			b (i) Criteria for modifications			b (ii) Describe & Discuss 2 modifications				b (iii) Sketch des mod		b (iv) Advert strat	
Centre	Candidate	Total	1 for each form			1 mark/criterion			1 mark/analysis			1/criterion			Des	Dis	Des	Dis	1/modif		Dev	Just
No	No	/20	1	1	1	1	1	1	1	1	1	1	1	1	$\frac{1}{2}$	1	$\frac{1}{2}$	1	1	1	1	2

Markers' Comments

Part (a)

Communication is a process by which information is shared, transmitted and recorded.

(i) List THREE forms of communication used in design and production. (3 marks)

The majority of candidates were able to identify three forms of communication or communication media.

Example:

– *written*
– *graphic*
– *electronic*
– *verbal*

Example:

– *personal: letters, sketches, speech, body language*
– *mechanical: printing, records, audio tape*
– *electronic: TV, Radio, Internet*

Alternatively candidates provided examples drawn from different media or forms of communication.

Example:

– *drawing/sketches*
– *spoken: transmitted by telephone*
– *video/TV*

Poorer responses considered only technological variations in one form of communication.

Example of a below average response:

– *telephone*
– *mobile phone*
– *cordless phone*

Some candidates misconstrued the question and listed methods of promotion (directing information to) or research (seeking information from), rather than forms of communication (sharing, transmission and recording of information).

Example of abelow average response:

– *surveys*
– *questionnaire*
– *interviews*

Example of a below average response:

– *advertising*

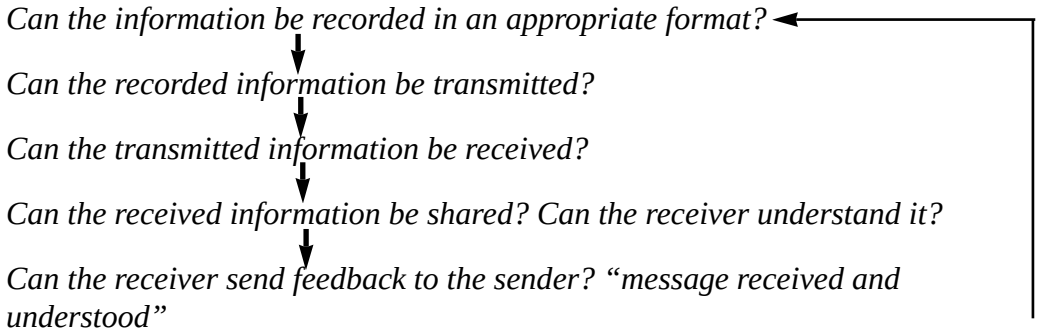
– *publicity*

– *point of sale*

(ii) Suggest THREE criteria for evaluating the success of any method of communication. (3 marks)

Better responses indicated an understanding of the process of communication. These candidates suggested criteria which identified critical points in the communication process and which could be applied to evaluate the success of ANY form of communication.

Example of an above average response:



Example of an above average response:

The most important factors influencing the success of ANY form of communication is whether:

- *the information can be sent and clearly received*
- *the received information can be clearly understood*
- *the received message can evoke a reaction or reply.*

Poorer responses identified successful features of individual communication technologies rather than generic criteria.

Example of a below average response:

internet — fast

mail — cheap

code — secure

Some poorer responses identified strategies to determine successfulness of design and production processes.

Example of a below average response:

- *Compare with other similar products on the market. See if their form of communication works better.*
- *A comparison of any previous product sales to the product that's just been marketed.*
- *Compare the production or advertising costs with any other previous advertising costs.*

(iii) Analyse communication forms used in the development of your own major design project, according to the three criteria listed in part (a) (ii). (3 marks)

Better candidates:

- Identified forms of communication used in their major design project that allowed them to share, transmit and record information.
- Analysed these forms of communication using the criteria they suggested in part (ii) above.

Example of an above average response:

In my major design project there were a number of forms used to collect, test and distribute information.

I used discussion with a number of experts to share my ideas and get feedback on how feasible they were. One piece of advice I got which was invaluable was 'don't use these springs (the ones in my design), use longer ones they give a smoother ride'.

Written communication was used to communicate my concepts to manufacturers. Transmitting ideas in this way meant that we were all clear on the concepts

In my literature there were many annotated sketches – the manufacturers could easily interpret and give good feedback.

Some candidates interpreted 'analyse' in the question as referring to evaluation of their own communication. They were awarded full marks, if in doing so they applied the criteria identified in part (a) (ii).

Example of an above average response:

… the forms of communication included making phone calls and presenting photographs and a written folio.

The phone calls worked well, because they allowed me to contact experts and share ideas. Some of them sent back information that I could include in the designs of my leadlight.

The written text and graphics in my folio seemed to be effective forms of communication. My teacher said that the markers would be able to understand the plain English I used and that the technical terms were well explained.

The photographs were not as successful because they came out fuzzy. My lack of experience with the camera meant that I did could not record information effectively using this form.

Less successful candidates did not relate their design project or forms of communication to the criteria for analysis.

Examples of an average response:

The use of posters and models helped convey the message.

Drawings and sketches all had labels.

Description of good and bad points included areas of investigation to be done.

Very poor responses simply described processes used in design and production of the major design project. There were no attempts to analyse communication.

Example of a below average response:

I sketched my design, setting out what I intended to build.

After I built it I put in all the glass to test it to see if it would hold. After I finished testing I took it apart to add extras and that was my finished product. I communicated with my teacher and fellow candidates at each stage.

Part (b)

A design consultant has been asked to modify the design of the following cup to enhance its use or function for

Either

- **young children**

Or

- **visually impaired people.**

Answer the following questions in relation to EITHER young children OR visually impaired people.

Most candidates chose to redesign for the young child.

(i) Identify the criteria to be considered when designing the modification.

Most candidates were able to identify at least two criteria. Most often criteria related to ergonomics of handle and the stability of the cup. However, criteria related to the material and the appropriateness of the pouring pattern also received regular attention.

A large number of candidates chose to list their criteria, whilst the most capable candidates qualified their response with a brief explanation.

Example of an above average response:

The cup must demonstrate the following:

- *be able to be used or held by a young child who may not be able to hold a small handle*
- *must be aesthetically pleasing*

- *must be suitable for young children to drink from — not a wide neck at the top and a narrow base*
- *must be long lasting — shouldn't break or chip if dropped.*

Candidate responses also reflected other criteria. However, it was essential that the criteria related to 'use or function'. For example:

Visually impaired person:

- *it must be easy to hold*
- *it must be stable*
- *it must be bright (easy to see).*

Ranges of responses for this part primarily focused on:

Young child

- stability/broad base
- large ergonomic handle(s)
- appropriate pouring pattern
- impact resistant.

Visually impaired person

- stable
- ergonomic handle
- visible (bright)/tactile pattern
- insulated — safety.

(ii) Describe and discuss at least TWO possible modifications.

Candidates had few problems in identifying two possible modifications. However, a number of candidates were unable to adequately describe their modifications. Instead they simply listed multiple design modifications.

Above average candidates were able to discuss their modifications, explaining why or how the modifications would improve use of function. The best responses referred to stages of development or degrees of impairment and stressed the importance of designing to meet specific needs of the user. For example:

Possible modifications are changing the handles to make them bigger and so allow gripping by the whole hand. Young children have not yet developed the fine motor skills necessary to grip a thin handle.

Example:

- *Increase the size of the base to increase stability, reducing the chance of sight impaired people knocking it over — reduce spillage.*
- *Paint it in bright colours so that people with limited vision can see it separate from the background. So they can pick it up.*

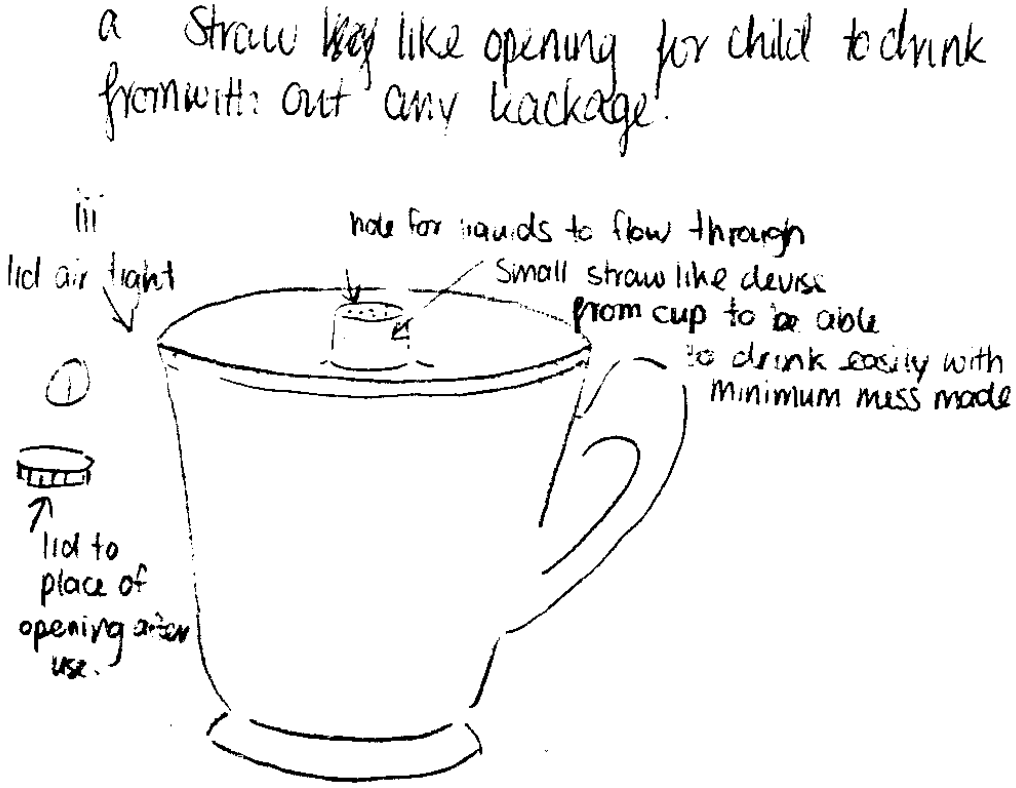
Most candidates based their modifications on the criteria they identified in part (i). However, this was not used as a criteria when awarding marks.

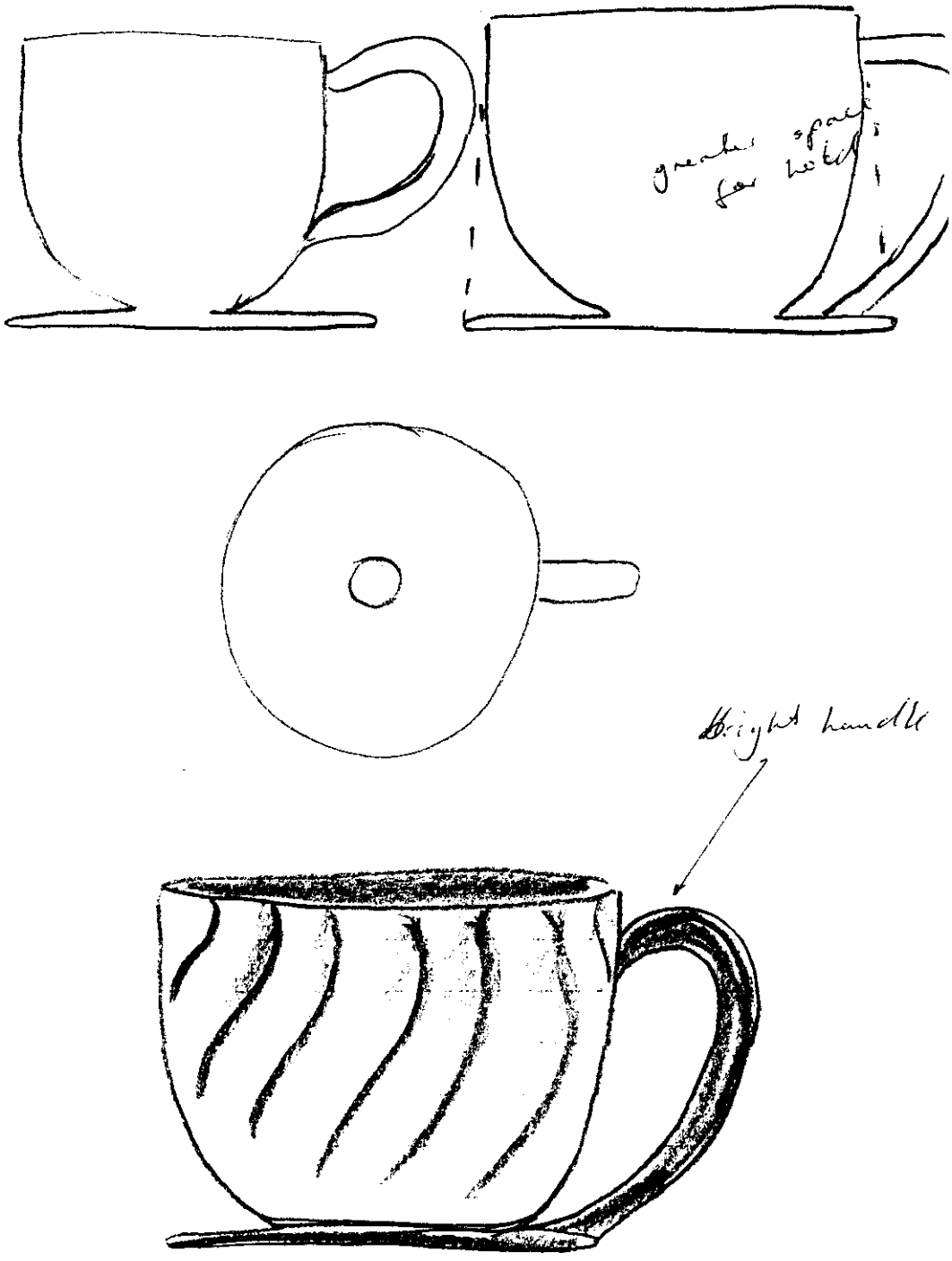
(iii) Sketch initial ideas for the new design.

Overall, this part was well answered. Candidates effectively communicated a wide range of design modifications.

At least two discernible design modifications were required which were consistent with their description of the new design. To adequately achieve this, the better candidates used an orthographic layout or at least two views of a pictorial drawing. Alternatively, one or more sketches were used. These were successful when they clearly communicated the modifications on the new design. This was most often achieved through use of labels and annotations.

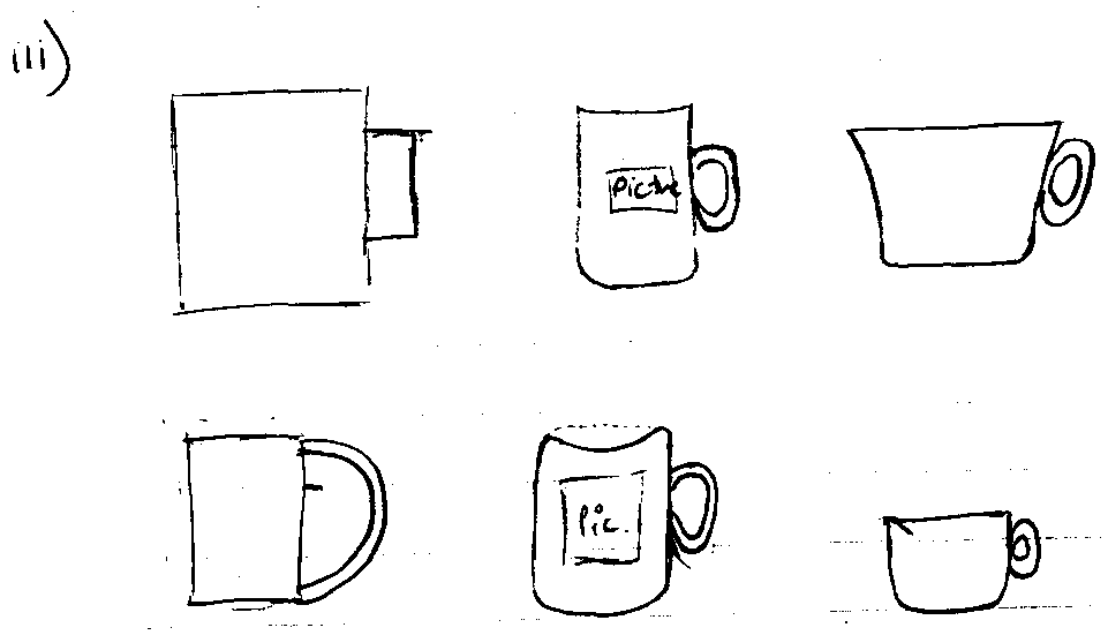
Example of an above average response:





Poorer responses failed to recognise the requirement for 'the new design'. They provided sketches of many different designs (some of them incompatible), without clear indications of how the modifications would be incorporated into a composite 'new design'.

Example of a below average response:



(iv) Devise and justify an advertising strategy for the new design.

This part proved to be difficult for many candidates. Candidates found it difficult to distinguish between 'marketing' and 'advertising'.

It was important for the chosen advertising strategy to relate features of the new design. This was done by either featuring the design modifications graphically, or describing how the new design would feature in advertisements.

Above average candidates were able to identify how the advertising strategy would be targeted at a particular market section.

Justification of the devised strategy was, in general, done poorly. Candidates relied upon 'selecting a good strategy' as a response.

Candidates identified a variety of media to 'advertise' the new design. Television and magazines were the favoured media. The most effective responses justified the use of particular media through identifying specific programs and time slots or particular magazines. They then related these to the target market and described how the new design would be featured in their advertisements.

Example of an above average response:

An advertising strategy for the new design would be in the form of a magazine 'visual'.

The magazine would be like Woman's Day or Family Circle ie Housewife stereotypical magazines. This is because it is aimed at mothers with young children. The advertisement would take form as:

Child standing over spilled mess

Horrified look

Dishevelled mother with cleaning gear

The next page would show the following:

Mother and happy child

Child using the new design cup

Picture and name of cup to promote both

This type of ad would work well because mothers all know the pain it is to mop up the constant spills. The picture of a horrified child (or any child in comical form) draws most people in. The mother and child on pages one and two project images most can relate to.

Major Design Project (60 marks)

Markers' comments

The Major Design Project is marked wholistically. Markers examine the product, system or environment (PSE) and the folio together. Decisions made by candidates in the conception and development of a Major Design Project are evidenced in the PSE and mirrored in the folio.

Project Proposal (0 marks)

This section was handled far more competently by most candidates this year; however, long-winded, repetitive and inappropriate responses were commonplace. The project proposal should be concise and succinct. Many candidates spent far too much time 'setting the scene'.

The proposal was too often inadequately identified in terms of needs, areas of investigation and criteria to evaluate success and, therefore, many candidates were not able to reflect this in their evaluation section.

Project Management (15 marks)

The better candidates planned (predicted) their actions before undertaking the realisation of their projects, and then evaluated their management both throughout the development and realisation, and after the project was completed. Those who did well in this section had generally laid out and followed clearly pre-defined plans; those who displayed poor management skills often presented incomplete projects.

A number of candidates failed to show evidence of management in their folios, and this was sometimes reflected in the realisation of the project, system or environment. Candidates simply stated 'I am going to make X project with Y material'. There was little or no evidence of design development. In such cases folios were generally disorganised and of poor quality.

Time, Action and Finance Plans were often in the form of a diary of past events, rather than of prediction and evaluation. In some cases it was obvious that they were written after the project was completed, since some action plans linked almost identically with the diary and were expressed in 'past tense'. Many action plans failed to identify design, research and testing and only documented the construction of the project, despite the fact that such management activities were evident in the product, system or environment.

Many candidates could not distinguish between a finance plan and a list of receipts for resources. Very few candidates actually provided any evidence of forward planning in regard to finance, or justification of how they had arrived at a 'projected cost'.

Identification and Justification of resources were poorly handled. Many candidates identified the material resource that they used but failed to justify why they selected it, rather than alternative materials which may well have been available. A large number of candidates did not acknowledge other resources such as tools, techniques, energy, finance, information, time, skills and human resources such as teachers, parents and industry. Consequently, those candidates failed to address many important syllabus requirements.

Project Development and Realisation (38 marks)

Candidates generally did quite well in this section. Some, however, failed to show any evidence in the developmental stages and their project was a realisation of their first and only design.

Good candidates based their project on thorough and relevant research, with appropriate testing and experimentation included and clearly identified. In such cases decisions about the selection of materials, tools and techniques were related appropriately to the original project proposal and to the criteria for evaluation. Good candidates included evidence of testing through models, samples, photographs, videos or other appropriate examples.

In many cases, however, evidence of research was weak and too often took the form of a folio or folios full of brochures, without clear identification of the relevance of aspects of these brochures to the project. Candidates need to keep in mind the importance of evaluating research and experimentation. Design development from initial ideas and concepts was poorly documented, with many candidates stating almost from the start a finite and inflexible plan.

In many cases, little or no experimentation or testing was apparent. The majority of candidates must have conducted tests and experiments to achieve the standard of work presented but many had not recorded them in their folios. Testing and experimentation were often included as an afterthought rather than as a means to an end solution. In some cases candidates carried out extensive testing and experimentation but ignored their findings.

Graphics need to be relevant to the sequential development of the project. Candidates often failed to show evolution of ideas — from concept sketches to final design drawings. Very few working drawings were presented in the folios. There was a general increase in computer generated folios. Candidates need to bear in mind that the fonts and styles they select need to be easily read and interpreted — some of the more artistic fonts proved to be extremely difficult to decipher. The increased use of WP and DTP highlights the need for many candidates to be given instruction on ‘how to use a spell checker’. Typographical errors were prolific.

Practical production skills were at times of a very high standard, but many candidates compromised the final quality of their PSE by spending excessive time on their folio. The evidence of the practical skills was quite well documented, often in the form of labelled photographs.

Candidates who encountered problems and tried to solve them often showed innovation in their work. When documented well, these candidates improved the quality of their project. Generally, however, documentation in this area was poor, with little evidence of creativity. This was caused, most often, because candidates had little idea about design development — rather they chose a project and made it. Those who innovated for the sake of innovation (rather than improvement) tended to sacrifice some quality in their final project. Innovations made must be relevant to, and an enhancement of, the design project.

Evidence of safety considerations should be addressed in the candidates’ folios and be evident in their PSE. It was still a concern to see photographic evidence of candidates working on their projects in unsafe environments. Protective safety equipment should

be worn by candidates when necessary. It was pleasing to see that most candidates had electrical projects tested and certified as safe by a licensed electrician. The provision of earth leakage safety cutout power supplies has also increased.

Project Evaluation (7 marks)

Evaluation proved to be the most difficult aspect for the candidates in most cases.

Some candidates documented their evaluation in terms of *liking it, being happy with the result* or *learning a lot.* Although these are worthy sentiments, they do not address the examination evaluation criteria.

Evaluation needs to be ongoing throughout the project, as well as at the end, and it should reflect the criteria for evaluation identified in the Project Proposal. This was made easier in cases where the candidates had assessed and analysed the needs of the target market, personal or wider, and then evaluated all aspects of their project according to those needs.

Good candidates not only provided ongoing and final evaluations but also had other people (eg peers, experts and potential end users) evaluate both their design development and their solution. Very good 'professional' evaluations were included in some folios, where appropriate.

Evaluation varied from the excellent to non-existent. Evidence of evaluation throughout the project was often difficult to find because of poorly organised folios. Some folios included final evaluations, but often there was little or no evidence of ongoing evaluation. Candidates had obviously evaluated and made decisions throughout the project but had not bothered to document the facts.

Functional and aesthetic criteria were rarely evaluated well, and many candidates seemed to have a poor understanding of the meanings of these terms. Similarly, the impact of their project on society and the environment were rarely addressed. This was often hindered by an inappropriate choice of project as well as a poor understanding of the terms *society* and *environment.*

There has been a dramatic increase in folios that are far too long, containing material that bears little or no relationship to the actual project. The Major Design Project must be able to be marked in approximately 20 minutes. In that time the markers must be able to make a thorough assessment of the design project, which includes both the design folio and the PSE. The candidates need to present the design folio in a clear and concise way. They need to be able to identify the difference between irrelevant 'padding' and material that communicates their design ideas.

CENTRE NUMBER	**DESIGN AND TECHNOLOGY CHECK LIST** **A check sheet to aid in the application of the Design and Technology Subject Rules**																			
	FOLIO	PS or E	FOLIO	PS or E	FOLIO	PS or E	FOLIO	PS or E	FOLIO	PS or E	FOLIO	PS or E	FOLIO	PS or E	FOLIO	PS or E	FOLIO	PS or E	FOLIO	PS or E
Project Proposal / 0																				
Needs, Areas of Investigation, Criteria to Evaluate success																				
Project Management / 15																				
Action, Time and Finance Plans and their application																				
Identification, Selection, and the Justification of resources																				
Management / 15																				
Project Development and Realisation / 38																				
Document of research, experimentation and testing of materials, tools, techniques, resources and the Application of Conclusions																				
Evidence of Testing of Design Solutions and the Application of Conclusions																				
Use of communication and presentation techniques																				
Evidence and application of practical skills to a quality P, S or E																				
Evidence of Creativity – ideas generation and the Degree of Innovation																				
Development & Realisation / 38																				
Evaluation / 7																				
Record of Evaluation procedures throughout Design Project and the application of that evaluation																				
Analysis of functional and aesthetic aspects of design																				
Evaluation of the functional and aesthetic aspects of design																				
Final Evaluation with respect to design criteria and impact on society/environment																				
Relationship of PSE to the Proposal.																				
Evaluation / 7																				
GRAND TOTAL																				

3 UNIT (ADDITIONAL) EXAMINATION

Section I (12 marks)

QUESTION 1 (Compulsory)

(a) Analyse the relationship between developments in technology, people's attitudes and changing work practices in society.

Better candidates were able to develop a relationship between each of the three concepts identified in the question. Examples touched on were technologies such as the mobile phones which enable people to communicate with one another more easily, faster and more economically. The phones are more compact and assist people in their work. A large number of the candidates selected technologies not illustrated in the question paper and explored technologies such as medical technology, communications, transport, robotics etc putting up very substantial arguments relating to people's attitudes and work practices as they relate to the technologies selected.

For example:

As technology develops, the attitude of people and workplaces change. For example as the increase in greater technology–automation in industry it means that less and less jobs are done by workers and more by computer controlled robots, hence workers have to be skilled at watching up to 5 machines at a time instead of themselves doing any manual labour. Also the increase in technology means that manufacturing has found new ways of producing and it is also expanding and hence putting a strain on the environmental resources, and hence manufacturers are forced to find alternative ways for the energy needed for production, for example renewable resources such as in the case of example 2 where hydro, wind and solar energy is used, hence saving the natural (limited) resources left in the world. Also as technology increases the attitude of people change to, for example in figure 1, people can work from home now because technology has increased so much that people can communicate information via modems and work on computers at home, increasing more time that can be spent at home with the family — increasing leisure time.

Increased technology also has changed the way in which things are grown. Now, in today's society, large areas can be cleared with ease for monoculture to take place, for example the growing of large crops of Canola for margarine, also in figure 3, technology has increased so much that the medium for growing plants is now synthetically made instead of using soil, and it is also very efficient to increase yields and profit margin.

Some candidates used a table to illustrate the relationship of the different components of the question and this clarified the points into clear categories. This method illustrated the points they were making very clearly.

For example:

(a) Developments in technology

- *Being able to compact equipment so it doesn't take up as much room in the work place eg, in Figure one.*
- *Advancing technology has provided us with less wastes: better for the environment and conserves energy by using natural resources eg, solar power, wind and water like in Figure two.*
- *Advancing technology can also be a problem when machinery is used in companies instead of peoples labour, makes jobs more efficient and affective but can have disadvantages.*

People Attitudes

- *Makes peoples lives more convenient eg mobile phones can now fit in pockets before were very bulky.*
- *People can live healthier lives in society because there will be less air and noise pollution.*
- *People can become angry from this advancing technology because many people will become unemployed or don't have to use any of their skills to work. They just operate machinery.*

Changing work practices

- *Now that technology is compacted equipment it is easier to work from home because all the equipment is available.*
- *Can use more energy and it will be cheaper for the working place. Work place can be more environmentally friendly place to work = cleaner.*
- *Have less labour jobs, machinery makes jobs quicker, easier and can do a lot of the dangerous jobs.*

However, many candidates failed to cite examples to substantiate the points they were making and lost some marks. Generally, examples that illustrated the relationship between technological developments and people's attitudes and work habits were not well explored. Understandably, the candidates who scored well were those who explored the developments listed in the question paper and carefully dealt with each concept at a time while constantly relating the argument back to the technology selected.

Some candidates forget that 'attitudes' towards any technology can be positive or negative. With positive attitudes including factors such as providing a greater challenge, about learning new skills, improving the working environment, improving one's quality of life etc. Some negative attitudes that can develop could stem from the unknown, people's fears, perceived problems, distrust, possible loss of jobs and sometimes people simply being satisfied with what they have. Candidates seldom used these points to enhance their responses.

Others, again, responded well to the component dealing with the effect new technologies could have on the workplace with more people now taking the opportunity to work from home. Many brought into this answer the 'down side' in the loss of companionship and the feeling of isolation.

Unfortunately, some candidates — not many — did not understand the question at all. For example:

(a) In a long time ago, if someone want to made a farm or produce a lot of flowers. It must have a big garden or a big farm land. And need to put all plants under the ground. Use the cow, chicken or human manual to do the ferterliser. And carry a big tin of water to feed some water to the plants. But now all is changing to be easy and quick. Don't need to spent a hold day to do it. It used a plastic containers and some soil inside that can plant out the flowers or vegetable. Every plant can separate in every plastic containers. That can take there own ferterliser and water. It grow better, stronger and more beautiful. And the ferterliser is produces from the cow, chicken, fish or mushroom after manufacturing. Better smell and clean. Now is used the polythene pipe and flow-regulated dippers for nutrient solution. So it can do the other things when you are doing the nutrient solution. And also if got any bad weather, it can important documan to the other country just 1 to 2 minutes. So many factors, shop, offics and supermarkets etc also use to order some product or material. And computer also can reduce a lot of labour. It can reduce the wages but it made a lot of people loss there job. So in this few year, many people go to learn computer to help them to find a new job.

(b) (i) Explain why the technological system you have chosen is innovative.

Most candidates answered this part very well. Unfortunately, some candidates simply 'stated' the technology without explaining why they felt the technology was innovative. Others responded to the question by simply rewriting the descriptions on the question paper and presenting that as an answer. These candidates did not score well.

(ii) Comment on the likely motivations behind the development of the innovative technologies.

Generally well answered. However, many candidates ignored the fact that the question asked for 'motivations' (plural) and only mentioned a single motivation. The type of response provided by those who scored well (with reference to Figure 2) reflected the motivations related to technological initiative that were environmentally friendly, energy efficient, water saving, more healthy, providing an alternative style of life, saving on non-renewable resources etc.

(iii) Discuss the role of entrepreneurial activity in the enterprise associated with the technological system.

Of the three parts, this was the one candidates found most difficult to respond to. It appears that many are still unsure what 'entrepreneurial activities' involves. This was clearly evident where candidates tried to link these activities to the technologies selected. The better candidates were able to define the entrepreneurial activity and then related it to the example.

A typical above average response to 1(b) was:

b) Figure 2

i) Figure 2 is very innovative because it uses all renewable resources/alternative resources and is very efficient and is self contained/self supported.

ii) The most likely motivation behind the development of this innovative technology — the use of alternative energy sources, was probably the push to stop using non-renewable energy sources such as petrol, gas, coal, wood, because these are depleting at a fast rate and only have a finite amount left in the earth, also the resources create a lot of by-products or waste which bring harm to the environment, for example: petrol when combusted in car engines produces a variety of gases — carbon monoxide, carbon dioxide which build up the green house effect and produce large amounts of smog which bring about respiratory problems in some people. The use of these alternative energy resources — wind, solar and hydro energy — are not detrimental (harmful) to the environment and can be renewed easily.

iii) For the use of alternative energy sources, for example the water powered generator, wind powered generator, the solar panels, the organic waste converter, much money would have had to been gained to fund all the set up and research into the alternative energy generating sources. This where the entreprenial activity would have taken place, for example (as mentioned) the fund raising (money for buying equipment), the researching, the gaining of potential clients to help sponsor or fund the project.

(c) Economic, cultural, political, and legal factors influence the rate of adoption of innovations. Critically discuss this statement.

Again the technologies candidates selected included a wide range of innovations. Those candidates who performed best were the ones who quoted realistic examples. The better answers addressed the 'rate' of adoption stating that the rate was initially slow as a result of cost, restructuring, uncertainty, etc and gradually the rate increased because of improved confidence etc. Most candidates addressed the link between the innovation and its economical and political implications with the better candidates detailing the cultural and legal factors. A general observation is that candidates should not lose sight of the fact that a 'critical' analysis or discussion must involve looking at the positive as well as the negative aspects of the argument.

For example:

c) Economic factors influence the rate of adoption of innovation due to the amount of money and the state of the economy at the time of the realisation and the project. For example if there was a slump or recession in the economy of Australia, people would not be in a hurry to buy the items in figure 1, due to the shortage of cash and the prices of the innovations. Cultural factors influence the rate of adoption of inovations in that differing cultural ethics may be opposed to different innovations and hence slowing the rate of realisation of that innovation, for example the production of a new swimming costume and selling it in Arabic countries. Political and legal factors influence the rate of adoption of innovations. For example, the ban (illegal) growing of marajuana for hemp to produce clothing and other items, and growing them in hydropronic mediums such as in figure 3.

3 Unit (Additional) — Question 1

		Marks						Centre	
								Candidate	
Part A		1 or 2	Technology	State technological development, describe relationship, or analyse the relationship					
		1 or 2	Attitudes	State the attitudes change, describe relationship, analyse why they have changed.					
		1 or 2	Work Practices	State work practice change, describe relationship, analyse how changed.					
		1	eg 1	one example					
		1	eg 2	more than one example					
				Note: Part B MUST refer to ONE of the *"technological systems"* shown.					
Part B	i)	1	States	Selects a technological system from the three, describes it only.					
		1	Explains	Explains why it is a technological innovation. In use or in application.					
	ii)	1	Mentions 1	Mentions a likely motivation, expresses an opinion.					
		1	Mentions more	Mentions likely motivations.					
	iii)	1	Relate	Talks about entrepreneurial activity.					
		1	Link	Links the activity to the system.					
Part C		1 or 2	Discuss one of the factors (economic, cultural, political, legal) give example, relates to the adoption rate to obtain 2 marks						
		1 or 2	Discuss one of the factors (economic, cultural, political, legal) give example, relates to the adoption rate to obtain 2 marks						
		1 or 2	Discuss one of the factors (economic, cultural, political, legal) give example, relates to the adoption rate to obtain 2 marks						
			Maximum 6 for this question.						
		20							

Section II (8 marks)

Candidates attempted ONE question from this section. All questions were of equal value.

QUESTION 2

(a) (i) State TWO examples of use of security systems and surveillance technologies.

Most candidates were able to give at least two responses. The above average candidate gave more unusual examples such as insurance investigators, X-ray machines. The average candidate mentioned examples such as banks, train stations, shopping centres and police use. The poorer candidate described the system rather than the use of the system.

(ii) Suggest possible advantages and disadvantages of the use of security systems and surveillance technologies in society.

Overall, most candidates were able to give at least one advantage, one disadvantage. The above average candidate fully described the advantages and disadvantages in detail, providing at least two examples of each. The average candidate gave responses such as protecting people and property, safe environment, invasion of privacy and misuse of information. Usually one advantage, two disadvantages were given. The poorer candidate gave only one response in limited detail such as 'to catch the thief'.

An example of a poor response:

(ii) The advantages with having security systems and/or surveillence technologies within our society is so we can prevent the crime from occuring and/or catch the thief redhanded on the surveillence video.

There is in my books no disadvantages with having security systems or any surveillence technology.

An example of a good response:

ii) Advantages of use

- *Decreased theft of company property*
- *Increased management awareness of business situation*
- *Deterent to crime*
- *Increased safety for people/personel as are being monitored*

Disadvantages of use

- *Invasion of privacy*
- *Decreased worker comfort leading to decreased moral/motivation*
- *Increased costs for business to install such technology*

(a) (iii) Propose ways in which the disadvantages of the use of security systems and surveillance technologies to society or individuals can be minimised or controlled. Evaluate your proposal.

The above average candidates gave at least two proposals with positive and negative aspects to their proposal clearly outlined, eg creating guidelines for the technology use and having permits for the installation of surveillance technology. The average candidates provided at least one proposal with minimal evaluation of their proposal. The poorer candidates tended not to attempt this part of the question.

An example of a poor response:

iii) Someone could invent a cheaper and as effective solution so that there will be more security systems sold because of the lower prices and more safe homes and companies.

An example of an average response:

iii) There would have to be more careful laws placed to stop people from using them in the wrong ways. There could also be checks made on the people who buy the cameras to where the put them. Heavy fines could be used if found.

An example of a good response:

iii) The invasion of privacy can be controlled through the creation of guidelines in government policy restricting their use to officers of the law and permit holders, recorded in a database.

Environmental concerns and littering of streets with cameras can also be controlled through government policy detailing for example locations, and heights and sizes of cameras.

Information security can also be controlled through government policy, limiting its use only for police or law reasons.

Government policy and the implementation and enforcement of guidelines is the only longterm and sensible control available. It allows universal conditions and should be enforced by a government body to be successful.

(b) With developments in technology, it is possible that all personal data will be stored on one card … Critically discuss the ethical and commercial implications of the universal use of such a system.

Most candidates had a better understanding and/or awareness of the ethical implications.

The above average candidates gave two responses for both ethical and commercial implications and were able to give both positive and negative views of these implications.

The average candidates gave ethical implications such as privacy and abuse of information as common responses. The use of information for market research was a common response for the commercial implication. This candidate gave one or two ethical, but only one commercial implication with minimal discussion.

The poorer candidates only addressed the ethical implication with one example, usually the issue of privacy. No critical discussion was attempted.

An example of a poor response:

b) People would have access to other peoples personal information. This is not ethical because it takes away peoples privacy. It would be good from a comercial point of veiw because it would make things simpler and easyer if information was all compiled on one card you wouldent have to run around finding information.

An example of a good response:

b) The card may be a great innovation but it would have many faults. Ethically the personal data of the person is at risk. If the card gets in the wrong hands the person may be in danger. The card may get lost, the card may be used for other purposes eg fake identification. The cards may be forged thus having false databases which rises the issue of data integrity. Also the issue of data validation. The card needs to be reliable with the information stored on it making sure that its all correct and the issue of data redundancy may also occur. This is the duplication of data. One person may have more than one card. This card would prove to be a great success universally because of the high crime risk involved. The card is however a great system to have within a single company but even still there would be risks to take involved.

And:

b) Bob Hawke, when Prime Minister proposed the introduction of the Australia card which would lead to the linking of government databases such as RTA, medicare, police records. This system caused a huge uproar as an invasion of personal privacy.

Implications

Advantages

- *less redundancy/repitition of data in database*
- *less errors in different databases*
- *easier searching for personal details*
- *can be use by Police to apprehend criminals*

Disadvantages

- *possibility of all personal details being 'stolen' by unwanted people*
- *if errors made in inputting of details, more can be ruined*
- *possibility of corruption of system*
- *invasion of personal privacy*
- *possibly used by commercial bodies to find people to promote products to*

Such a system would cause huge implications upon society. Ethically the system is flawed by the possibilities for errors and corruption. Commercially, if a business got access to the database, it could search the data and get a list of people who fit certain parameters and then mail/phone them, creating a competitive advantage. This is immoral and unethical.

3 Unit (Additional) — Question 2

		2(a) Security & surveillance systems												2(b) Personal card ethical/commercial					
		Sec/Surveil Example 1	Sec/Surveil Example 2	Adv (2)		Disadv (2)		minimis'n /control (3)			Eval - Why it'l wk/Viabil.			Ethical and/or Commercial (4)				Discussion for/against (4)	Total
Centre	Candidate	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	/20

QUESTION 3

For ONE successful innovation in Australian design and technology activity that you have studied, answer the following.

(a) Name and briefly describe the innovation.

Candidates who scored lower marks in this part of the question chose a poor example that was not Australian, or were unable to describe it appropriately. For example:

The automobile (car). This innovation was produced for the transportation of people. It began in 1768, when Boris Freeman used a steam engine to push a structure on 3 wheels.

Average responses in this part sometimes nominated products that were not true innovations, or did not describe the innovation thoroughly. For example:

Poppy King, a now very successful entreprenuer, owes here new found wealth to an innovation which started off as a new style of lipstick — the matt finish look.

Good candidates named and described an innovation with sufficient detail to demonstrate a thorough knowledge of the innovation. For example:

The innovation is the 100% HCFC free refrigerator by Westinghouse (an electrical goods producer) referred to as the 'Enviro Aroura'. This innovation is 100% HCFC, CFC and HFC free in the isobutans refrigeration gas used and in the pentaine foam used for insulation; and is used through the technique of 'green freeze' technology. The innovation was developed in April 93 and is the first one of its kind in Australia. It was developed due to the increased concern in environmental issues ...

(b) Describe a design process that relates directly to the innovation.

Poorer candidates tended to describe the product or innovation, or to list the steps in a generic design process. For example:

A design process that relates directly to this innovation is the handling of the steering wheel of the car. A piece of machinery had to be instored in the main steering of the car, which enables it to function as power steering.

Average responses were not able to describe a chosen aspect of the design process, or were unable to show how a design process nominated related directly to the innovation. For example:

Poppy King first found her innovation when she was a young woman experimenting with the products on the market as many other women do. She was able to see that there was room for innovation and thus acted upon this and developed a new style of matt lipstick; capitalising off it with further investment.

Good candidates selected a relevant part of a design process, or described an entire design process that was used in bringing the innovation to fruition. For example:

Methods would have to have been researched concerning such environmental factors. The transformation of concepts to an actual good (ie a refrigerator) would have been an integral design process in the developmental stages of the product/technology.

(c) Discuss why the innovation was able to bring about change.

Poorer candidates tended to describe how the design of the innovation had altered, rather than discussing changes in society/production/distribution/waste management etc. For example:

The reason why the innovation was able to bring about change is due to it being a vital aspect of driving a car. It brought change by allowing the steering of a car to be handled more easier which makes driving a car much more relaxing.

Candidates who achieved average marks in this part tended to address change in a general way or only mentioned one type of change. For example:

The main reason this innovation took off so well was because Poppy was able to offer a product that society wanted and was ready for. Poppy, thus, influenced consumers wants by considering her own in the development of the design. She therefore changed fashion itself.

Candidates who addressed this part of the question well were able to discuss several reasons why the innovation brought about change. For example:

The innovation was able to bring about change because it involved new ways of doing things ie new ways/processes of developing refrigeration methods friendly to the environment.

The innovation brought about change through the actual use of the product. It changed the pace of future refrigeration methods — involving change in consumer usage and society. Such a product meant more energy efficient refrigeration methods as well as increased consumer/user friendliness.

Innovation brought about change to legislation ...

(d) Identify the marketing strategies and explain how they contributed to the success of the innovation.

Candidates who scored poor marks in this section mentioned only one marketing strategy or were unable to relate it to the overall success of the innovation. For example:

The marketing strategies would be to make this innovation suit the needs and wants of the drivers of the target market. This will contribute to the success of the innovation due to it aiming to look after the target market.

Average marks were scored in this part where candidates either listed generic marketing strategies without relating them to the innovation, or referred again to design or product development rather than marketing. For example:

The marketing strategies started with simple experimentation with available resources. Much of the success comes back to the product itself, but careful planning and the identification of a potential market allowed the product to perform to its best advantage.

Maximum marks were achieved in this part by candidates who identified several marketing strategies which had a specific input into the success of the innovation. For example:

The marketing strategies employed by Westinghouse focused mainly on the issue of environmental concerns. Marketing strategies focused on targetting to a wide target market — households and focused on environmental concerns as well as product most suited to the consumer. Marketing strategies focused on pleasing the customer — emphasising user friendliness and increased energy efficiency. Marketing strategies focused on a reasonable price for what consumers were paying.

Promotion.

Raising environmental awareness.

(e) Evaluate the impact of the innovation on either society or the environment.

Candidates who did not answer this section well tended to give unrelated or very general effects on society or the environment. For example:

The impact of the innovation on society is a great reponse. It enabled the competitors to have competition.

Average responses in this part did address impact on either society or the environment, but tended to be non-specific. For example:

As mentioned the impact on society was like a revolution. The product quickly rose to the head of fashion. Such success is significant as a factor of change and influenced the future of the industry and flexibility of the market to respond to changing consumer wants.

Candidates who answered this question well were able to identify a range of personal, national or global impacts on either society or the environment. For example:

The impact of this innovation on society has been good;

- *The firm Dynamic Lifter provides jobs.*
- *More is now known about the biochemical effect of fertiliser thanks to Dynamic Lifters continual research and development which has helped gardeners understand their gardens/farms.*
- *The firm provides expert income. It exports around the world, having 7 factories in Australia and the USAs Alabama and Hawai.*
- *Farms using Dynamic Lifter are more productive.*

3 Unit (Additional) — Question 3

Centre No	Candidate No	TOTAL	1	2	1	3	5	2	2	4
			name	describe	design	relationship	why change	marketing	explain	impact on society
					process			strategies	contribution	or environment

QUESTION 4

This question was attempted by only a small sample of the candidature. Many responses were incomplete and/or lacked sufficient substance in order to present a sound response.

(a) Explain the maining of the term 'entrepreneurial activity'.

Good responses

- Demonstrated knowledge of the skill involved in undertaking entrepreneurial activity and that there is a risk in funding projects/introducing them into the marketplace.
- Looked at factors such as strategic planning, strategic flexibility, communication, networking, protection of intellectual property, ie patents.
- Acknowledged that it is the overall management of innovation (products/services) including funding and support.

An example of a good response:

Entrepreneurship involves identifying and pursuing business oportunities, especially those which risks are involved, with the view of profits and entrepreneurial activity is the management strategies. There are six main steps which are associated with entrepreneurial activity and they include.

Strategic planning

Strategic flexibility

Change orientation

Communication

Networking

Negotiation.

These six steps are very important as they create a positive framework for an organisation that has the ability to change with the environment and society. These six steps are very important and is what makes up entrepreneurial activity and is what contributes to its success.

Average/poor responses

Focused on one aspect only — most commonly the notion of risk-taking.

(b) Discuss why the success of innovative design is dependent upon entrepreneurial activity.

Good responses

- Mentioned that entrepreneurial activity is vital to the success of innovative design in terms of supplying financial support and support in the research, development and marketing of innovation.

- (Strong) links were made with what was mentioned in part (a).
- Acknowledged that designers often do not have the skills to undertake entrepreneurial activity (or the capital) and thus need others to step in.
- Examples were provided where products designed by Australians were developed overseas due to the lack of entrepreneurial support in Australia, ie Ralph Sarich Orbital Engine. Also entrepreneurial activity provides opportunity for reworking of design, ie fine tuning.

An example of a good response:

Innovative design depends upon entrepreneurial activity through the provision entrepreneurial activity gives in regard to funding and talent in getting an innovation out into the marketplace — something a designer rarely has. Unlike government and private-enterprise in Australia, entrepreneurs are prepared to take risks in regard to financing and managing the commercial development of an innovation. Entrepreneurs are more-inclined to do this in light of recent successes, subsequently, if failures have recently prevailed, they will be reluctant to invest. Therefore, should entrepreneurial activity fail to operate, innovations will tend to be lost to overseas investment, leading to a loss to the economy. An example of loss due to the failure of entrepreneurial activity is Ralph Sarich's Orbital engine, which is now owned-overseas, losing Australia millions of dollars in export revenue.

Average/poor responses

Defined innovative design and/or rehashed entrepreneurial activity but did not show the link between these.

(c) A company is exploring the possibility of designing and producing a sun-protection product from recycled materials. The company's research has indicated that most existing sun-protection products are made from non-recycled materials.

(i) Suggest a possible product, and justify the choice of recycled materials to be used in this product.

Good responses

Demonstrated knowledge of sun-protection products and the range of materials currently existing to come up with a product (eg sunglasses, recycled plastic) that both has sun protective qualities (eg caps made from recycled paper, shelter from recycled fabric interwoven with plastic) and is made from recycled materials. Two or three reasons were given justifying the use of recycled materials (cost/availability/impact).

An example of a good response:

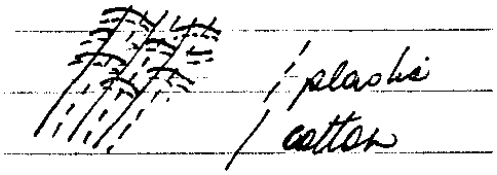
SUN PROTECTION — HATS

(c) (i) recycled materials such as someone's rejected clothing can be used, plastic, straw, plastic interwoven with material.

The hats will be durable, come in a range of colours, styles and shapes.

– the hats can be recycled several times

– *if the plastic is made into a thread such as nylon or cotton then interwoven with other cotton threads in a weave such as this*



The material will allow the head to breath even though it is made from [remainder of response missing].

Average/poor responses

- Mentioned a product which is either protective or made from recycled materials, eg umbrella, recycled paper.
- Some candidates were quite off the track and mentioned products such as bicycles and brake pads.
- Also — the better responses here came up with products that were made from several recycled components.

(ii) Propose a strategy that the company might use to create a market for this product.

Good responses

- Marketing strategy — focus on 100% sun protection, envrionmentally friendly components, DFD plus labelling of components, lifetime warranty. Emphasis these in promotional activities.
- Suggestions of slogans, ie 'No Sun + No Harm'. Indicating product protects us and it does not harm the environment.
- Using recyclable packaging. Discussion of likely target markets, market research procedures.
- Best responses referred to the 4 Ps and presented the strategy using these as headings.

Average/poor responses

- Discussed marketing very broadly and did not provide a strategy as such. Often the specific product in (i) was not referred to in the discussions.
- Others focused on product with little or no attention given to place, promotion and price.

(iii) Critically discuss the legal and ethical considerations that may influence the development and marketing of the sun-protection product.

Good responses

Legal considerations:

- discussed separate examples of considerations for development and marketing;
- good/best candidates referred directly to the sun-protection article in their answer;

- notions of testing the product and making sure it conforms to standards, not misleading the consumer with false advertising featured here.

Ethical considerations:

- discussed examples that differed to legal considerations so that it was obvious that they understood the difference;
- again reference to the specific product identified in (i). Intellectual property issues featured here.

An example of a good response:

Legal considerations:

Be sure that the final product and all its prototypes are patented and that all trademarks etc are copywrited to help ward off cheap immitations. Be absolutely sure that all claims made about the product are 100% truth. Manufacturers of beach umbrellas may take legal action at the 'bashing' of their products on the advertisement so be sure to follow all regulations there and don't mention names (brand names, manufacturer's names etc.)

Ethical considerations:

Make it the best product for the consumer and again, don't lie to the target market. Be sure all claims made about the product are true. There should be extensive testing of all materials to make them safe, child safe, fire proof, not let off toxic fumes in the sun, have no sharp edges or protruding, spike-like appendages.

Poor responses

- Were too broad and did not refer to the specific product mentioned in (i).
- Confusion as to which considerations are legal and which ones are ethical. Often repetition of examples/considerations across these areas.
- Did not attempt this part of the question.

3 Unit (Additional) — Question 4

3 Unit Design & Technology		(a)	(b)	(c) – i)		(c) – ii)	(c) – iii)		(c) – iii)		
		Entrepreneurial Activity	Success of innovative design & Entrepreneurial Activity	Sun-protection product from recycled materials		Marketing Strategy	Legal considerations		Ethical considerations		Total
Question 4 1996		Meaning		Product	Justify		Development	Marketing	Development	Marketing	
Centre	Candidate	3	4	2	3	4	1	1	1	1	20

Specialised Study (30 marks)

Markers' Comments

The Specialised Study includes both the research and development of a concept related to the 2/3 Unit (Common) Major Design Project (MDP) and the documentation of all the steps involved in this process.

Overall, the Specialised Study showed improvement from the previous year with a greater proportion of candidates more accurately addressing the subject criteria.

It must be stressed that the length of the Study is an issue. Fewer than 10% of Specialised Studies were excessive in length; however, some were as long as 5000 words. In respect to the marking criteria these candidates could be regarded as placing themselves at a disadvantage (because of the up to 20% penalty), compared to those candidates who abided by the rules in *HSC Subject Manual No 6* and kept to the word limit.

Concise Studies more accurately met the criteria and teachers would be advised to support candidates in maintaining the body of the study at 1500 to 2000 words. Reference to an appendix to validate the data is sufficient within the body.

Appendices and Extracts of 2 Unit Major Design Projects need also to be concise and clearly address the criteria. Samples of questionnaires, surveys etc are enough to indicate where the data in the study is sourced. Extracts need to reflect the nature and intent of the 2 Unit Major Design Project. Its full reproduction of the 2 Unit MDP folio within the Specialised Study or as an appendix should be discouraged by teachers.

It should also be impressed upon candidates that the 3 Unit Specialised Study is not a simple 'rework' of the 2 Unit MDP, but must be developed from the 2 Unit MPD as a research and development project, resulting in an Innovative Application, Marketing Strategy, Manufacturing System or a New and Improved Resource.

Many candidates reproduced syllabus definitions of these within the study which clearly reduces the number of words that they can allocate to the actual study within the 1500 to 2000 words.

Relationship between the 2 Unit Major Design Project and the 3 Unit Specialised Study

Candidates need to be clear on the requirements of their choice of either:

- an innovative application that refers to the adaptation of an aspect of the 2/3 Unit (Common) Major Design Project and its application to another context (Option 1)

  OR

- a manufacturing system that refers to the development of an effective and efficient procedure for the further production of the 2/3 Unit (Common) Major Design Project (Option 3)

OR

- a marketing strategy that includes the development of a strategy for the pricing, distribution and promotion of the 2/3 Unit (Common) Major Design Project (Option 4)

OR

- a new or improved resource that refers to either the improvement of a current resource used in the 2/3 Unit (Common) Major Design Project or the creation of a new resource which better meets the needs of the Major Design Project (Option 2)

in order to address the criteria as they apply to each of the above.

Careful thought needs to be given when selecting an option to develop a Specialised Study that is most suited to the MDP.

It became evident during the marking operation that many candidates could meet the requirements of 'extract of 2 Unit MDP' by simply photocopying the project proposal and the final solution of the 2 Unit. Markers found the information contained within these two copies was more than adequate to validate that the 3 Unit Specialised Study was a development of the 2 Unit MDP.

Candidates who omitted extracts of the 2 Unit MDP and did not establish the relationship between the MDP and Specialised Study were not awarded marks for the Project Proposal. Those who omitted extracts but did show a relationship were awarded a maximum of 4 marks for the Project Proposal.

An example of an appropriate extract is shown below.

To design and produce five 'mix and match' outfits for the petite female, which will be suitable for cocktail type functions. The targeted market is aimed at a wide range of shorter than average females that would like to have an individual look.

IDENTIFICATION OF THE NEEDS TO DEVELOP THE MAJOR DESIGN PROJECT

The major design product will be suited to the shorter than average women. The project will be an one off range of petite cocktail-evening wear. The product needs to be a reasonable cost, have slimming design features, height enhancing features, cool colours, smooth and drapeable fabrics, seasonal colours, affordable and aesthetically pleasing.

Areas of Investigation

Areas that were investigated for the product were in various department stores such as Grace Brothers, David Jones and Chinch, fashion magazines, television, shopping catalogues, clothing shops, fabric and pattern shops such as Spotlight, fashion books, own ideas and also looking through various books such as the encyclopedia, for clothing people wore many years ago such as medieval, Charleston times, 60's, 70's and 80's. Some of the extracts taken from magazines and reference books are shown over the page, with reasons why certain types of clothing were chosen to research. The area in which these pictures were investigated were in terms of style, colour, fabric and what is in fashion in the 90's and what the fashions were like in the early 60's.

The boundaries or limitations of the project consist of a number of issues. Time is a factor to be considered, as there is a limited time to get the project finished. Access to a variety of different fabrics and resources. There would have to be a limit on the cost of the project. The aim for the cost of the project would have to be under or up to the amount of $550.00. Other factors include accessories for the project. This may or may not be considered depending on the amount of time allocated to the other garments.

This candidate also included a photograph of garments that were developed in the 2 Unit MDP.

Project Proposal

Concise and clear descriptions of the relationship between the 2 Unit MDP and Specialised Study gave candidates the greatest benefit in obtaining marks for this section.

For example, one candidate wrote:

3 Unit Specialised Study

Through the Marketing Strategy I propose to establish a business to manufacture and distribute custom Body Styling Kits. Marketing is vital element in the overall strategic plan of a business. I would design and construct Body Styling Kits of similar style and specifications to my 2 unit Major Design Project to fit different makes and models of cars. The Body Styling Kits could then be painted to the colour of the car and installed in the workshop. A variety of promotions can be employed to promote my product into the market. The aim of the study is to establish whether or not a suitable market exists to produce such products similar to the 2 unit Major Design Projects.

And another:

I have elected to create an innovative application for my Specialised Study, concerning the lift ticketing systems of current use in all ski resorts, not only throughout Australia, but New Zealand as well.

Justification for the Study

Candidates often evaluated the various options for a Specialised Study and made their selection of a new or improved resource, a marketing strategy, a manufacturing system or an innovative application based upon a critical analysis of each option. Many candidates successfully used tables to keep their analysis brief.

Others were able to justify their study by showing needs identified in the 2 Unit MDP or needs which the 2 Unit MDP created.

For example:

Why is the Project Being Produced?

The project is being produced because I feel that the needs (discussed previously) of a contemporary woman's formal wardrobe has not been met and that my formal range will fill that previously unexplored and unsatisfied niche.

And another:

Justification for the study

The justification for choosing 'marketing strategy' was to explore the Major Design Project in terms of satisfying the potential targeted market. The marketing strategy will focus on developing ways to market the concept achieved in the 2 Unit Major Design Project (refer to extract 1).

Aims of the Study

Candidates who listed a series of dot points found they adequately covered this criteria, showing the outcomes that they expected at the completion of the study, listing the things that they aimed to do in the study.

For example:

Aim of Study

The following section outlines the aims and the intent of the study. The aim of the Specialised Study is to establish whether or not a suitable market exists for the design, production and sale of the Body Styling Kits. The following questions have been established to help develop the aims of the study and will be carried out through a variety of research methodologies.

1. *Does a market exist for similar products to the 2U MDP?*
2. *Is there a sufficient supply of materials for the production of the products?*
3. *Is the material suitable to be used for all the Kits?*
4. *Will the products be competitive and what is the market potential?*
5. *How will the products be priced, distributed and promoted?*
6. *Will the business be financially viable?*

OR:

The main aims of my Specialised Study are to:

- *Research current lift systems, on how they run and their efficiency, from all international resorts.*
- *Research other systems currently available for any type of queuing and determine their relevant resources, relating them back to Specialised Study.*
- *Test monitoring (or seek previous tests) systems and computer programmes using scanning devices.*
- *Determine the potential for such a system to occur in a practical environment.*
- *Identify and relate consumer (skier/snowboarder) needs and wants to the ideas of queuing.*
- *Identify current resources appropriate to various scanning devices.*

Criteria established to evaluate success

Successful candidates gave clear expressions of the assessment criteria that they would use to evaluate the success of their research and their study.

In order to analyse and evaluate the results of chosen methodologies (interviews, surveys, literature searches etc) candidates need to establish some criteria to evaluate the success of the study and research methods in helping achieve the aims.

For example:

Criteria to Evaluate Success

For the study to be successful the following areas must be fulfilled. There must be a suitable market (consumers) to purchase the products. This section is most important because if a market does not exist then there is no point in establishing a non profit organisation.

- *There must be a sufficient amount of the appropriate resources available to construct similar products to the 2 unit MDP.*
- *The material must suit the car the kit is to be attached to.*
- *The products must be competitive and a suitable market potential must exist.*
- *The products must be priced, distributed and promoted to the identified market.*
- *The business must be financially viable.*

Does a market exist? Yes / No

Is there sufficient resources available? Yes / No

Is it possible purchase the material for each product? Yes / No

Are the products price competitive? Yes / No

Is the business financially viable? Yes / No

Experts will be used to evaluate the marketing strategy to assess the financial viability and possible success of such a business.

Candidates who failed to establish such criteria were less successful overall because a clear direction to their study was not as apparent to them.

Methodology

This section is concerned with the way in which the research and development is conducted. The process of research and development should be appropriate to the aim of the study.

In the Methodology section of the documentation it will be necessary for candidates to describe the process of research and development. This will include research, ideas generation, testing, modification, decision-making, development and reflection. Throughout the process candidates should evaluate what they are doing.

Use a range of methodologies

Candidates are expected to identify, select and utilise a range of reliable, valid and relevant research methodologies in the Specialised Study.

Many candidates included surveys, questionnaires, personal communication, pilot study evaluation, statistical analysis and literature searches, Internet and other information technologies in their research.

Candidates are well advised to summarise this range in a short, concise format.

For example:

List of Research Methodologies

- *Computer files – Internet*
- *Interviews – Scott Eusten former resident to Perisher Valley*

  Rod Salisbury owner of Chatswood Sea and Ski
- *Magazines and articles – Computer magazines*

  Fashion magazines

  Textile magazines
- *Visual observations*
- *Letters/Faxes*
- *Books*
- *Surveys*

OR:

Primary Method

1) Interview

2) Survey

3) Phones

4) Faxes and Letters

5) Observation

6) Experiment

Types

- *Focus group interview*
- *Personal interview*
- *Shopping centre intercept*
- *Telephone Survey*
- *Consumer Sampling*

- *Door to door*
- *Mail – Questionnaire*
- *Phones Enquiries*
- *Interview*
- *Desk Enquiries*
- *Direct Observation Method*
- *Personal Observation eg shadow-shopping*
- *Mechanical Observation (eg scanner details, camera etc.)*
- *Primary Experimental Method*
- *Field Experiment/test marketing/simulated test market*

Examples

- *Target Market*
- *Professionals*
- *Marketing Personnel*
- *Target Market*
- *Professionals*
- *Marketing Personnel*
- *Government Establishments/Personnel*
- *Trade Associations*
- *Complementary Business Agencies*
- *Marketing Agencies etc (same as above)*
- *Markets, Stores, Boutiques etc (areas where target market is expected to shop)*
- *Product and market*

Table 1

Secondary Method

1) Book Research

2) Articles from Advertising Media

3) Libraries

4) Computer Databases and Linkages

5) Government Establishment And Trade Associations

6) Private Business Firms

7) Higher Education Research Organisation

Sources

- *Marketing Books*
- *Management Books*
- *Business Manuals*
- *Pamphlets*
- *Association Leaflets*
- *Governments Publications/Reports*
- *Statistical Yearbooks*
- *Journals*
- *Magazines*
- *Newspaper — Both Local and National*
- *State Library*
- *Bowen Library*
- *Sydney City Library*
- *Botany/Pagewood Library*
- *ACEL — Standard Index Plus*
- *ABIX — Australian Business Index*
- *Clib 91 — Census Data*
- *FMCR — Benchmark*
- *Small Business Offices*
- *Australian Bureau of Statistics*
- *Department of Business and Regional Development*
- *Standards Australia*
- *Textile, Clothing and Footwear*
- *Fashion, Sales and Marketing Association*
- *Fashion Marketing Agency*
- *NSW Uni Partnership Pty Ltd*
- *FMCR – Financial Management Research Centre*

Critical analysis of collected data

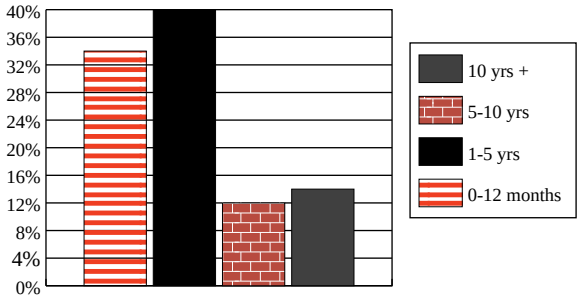
Many candidates found utilising graphical methods to be valuable when explaining and analysing data that they had collected from their research.

This also enabled them to easily show how the data affected the outcomes of their Study.

For example:

Q2) How old is your car?

34% of people indicated their car was under 12 months old.
40% of people indicated their car was 1–5 years old.
12% of people indicated their car was 5–10 years old.
14% of people indicated their car was 10 years old or over.



The above results further break down the age of the cars that people own to create a Segment Market which will help provide a better idea as to peoples individual needs in the way of Body Styling Kits. The purpose of a Segment Market is to determine whether the customer needs a specific product, have the potential for growth in that specific market, be profitable and have little to no competition.

Some candidates spoke about but did not critically analyse the data. For example:

There were two questionnaires conducted. The first questionnaire was conducted to determine if there were consumers interested in the concept. As a result of the questionnaire conducted it was made clear that there was an interest for this concept. The people that were surveyed ranged in age from the age of 17 to 54. This provided a clear indication that further development of the specialised study would be appropriate. (Refer to extracts 4 and 5.)

Average candidates often did little actual research but discussed what they could do. Hypothetical studies are not well rewarded in the subject criteria.

Poorer candidates presented very little data as a consequence of the lack of actual research.

Generation, testing and modification

Generation, testing and modification of ideas was generally well handled by those candidates who attempted this section.

Various strategies were used to communicate these ideas including computer presentations, which candidates and teachers are reminded should be presented in hard copy form.

Idea generation resulting from the analysis of collected data was made particularly clear by better candidates. For example:

Generation, Testing and Modification

DEVELOPMENT OF PROMOTION

The range of ideas include developing ideas for promoting the concept of the garments made specifically for the shorter than average female. The ideas are as follows:

- *Developing a brand name or designer name that people can identify with*
- *Developing a logo*
- *Developing magazine advertisements, TV commercials, and billboard posters.*

Through the various methods of determining which idea will work, a number of ideas were drawn up to determine which idea will work best.

IDEAS CONCERNING THE DESIGNER NAME:

- *ZORAM*
- *AROZ DESIGNS*

The name which had been chosen by surveying people was the name ZORAM. People had found it to be a simple yet catchy name.

Preliminary ideas were often tested and modified by feedback from trialling or survey by better candidates.

Poorer candidates who attempted this section did not show any testing or modification of ideas.

Some candidates did not attempt this section.

Description and justification of resources used

Better candidates summarised into an easily understood format. For example:

Resources

Resources that will be used throughout the study include human evaluators of the study, financial advisers, RTA, fibreglassers, Body Styling Kit Distributors.

This was followed by justification of each of the resources.

Many candidates mentioned more resources that they had used throughout the study but failed to place them in the summary. Candidates are still given credit for these resources if they describe and justify them.

Too many candidates failed to adequately identify the resources they used. Some candidates used only their own experiences in their Specialised Study.

Description and justification of processes undertaken

Candidates who satisfied this examination criteria well could describe the process they undertook to complete their study and justify the use of these processes.

Justification proved difficult for many candidates but those who achieved success related the effectiveness of the processes used in terms of their defined aims of the study.

An example of a candidate's work:

1) Book Research

Enable me to:

- *Form basis/core knowledge on marketing*
- *Gather Information much faster than primary research*
- *Gain and analyse statistical facts of large and comprehensive regions*

2) Articles from Advertising Media

Enable me to:

- *Keep up to date with the current marketing environment*
- *Find information that I may not find in books*
- *Find profiles to specific lifestyle groups etc., therefore allowing me to analyse trend changes, etc.*

3) Library

Provide:

- *The best all round source of secondary information*
- *Will contain a lot of publication and topical books*
- *Me with wide access to computer databases and linkages*

4) Computer Databases and Linkages

- *A relatively new way of quick accessing information and can topics can usually be search more easily than the traditional print based format*

5) Government and Trade Associations

Provide access to:

- *Government bodies and Industrial publications*
- *Specific trade data, statistics, current regulations, etc.*

6) Private Business Firms

Provide:

- *More accurate and realistic data on marketing environment*
- *Modified the alternatives and options in the textbooks for my product by taking into account the current market trends and changes*

7) Higher Education Research Organisation

- *Most large tertiary education institution publish findings of value to the business community*
- *Less bias information as they are often independent groups*

End Result

Synthesis of ideas

Candidates who related the synthesis of ideas to their criteria to evaluate success performed best on this section. For example:

The following section outlines the specialised studies achievement assessed against the set criteria to evaluate success.

Does a market exist?

Yes, a large lucrative market does exist for the sale of similar products to the MDP. The market has been identified through a survey questionnaire which provided feedback from the market audience.

Is there sufficient resources available?

Yes, there is a sufficient supply of resources available to support a business as outlined in the study. This was determined in the interaction with a fibreglass expert.

Is it possible to purchase the material for the product?

Yes, the material and resources can be purchased from a specialist fibreglass distributor.

Are the products price competitive?

Yes, the price is very competitive with other distributors mainly due to the lack of competition in the past.

Is the business financially viable?

Yes, the business is financially viable as results obtained from financial projection forecasts clearly indicate a healthy profit after calculating establishing costs, running costs and expected sales. The viability of the study is also reinforced by a small business loan approval. (see appendix 3)

Other candidates stated the product of their study by showing a synthesis of data in a summary form. Graphical means were also used leading to flowcharts for Manufacturing Systems, brochures and point of sale material for Marketing Strategies, Drawings for Innovative Applications, Photos and descriptions of New and Improved resources.

Critical analysis of effectiveness of study and viability of proposed development

Critical Analysis involves reviewing the benefits, costs and implications of, in this case, the Specialised Study, the effectiveness of the study and the viability of the proposal.

Better candidates focused their attention on the study, evaluating the procedures and processes used in the development of their Marketing Strategy Manufacturing System, New and Improved resource or Innovative Application.

Some candidates talked at length about the proposal, the result of their study, rather than the effectiveness of their methodologies.

One candidate wrote:

CRITICAL ANALYSIS OF:

Effectiveness of the study

With the proposal of this study came the aims, which were to:

- *research current lift systems, other systems of queuing, testing scanners, determining the potential for the device, identify consumer needs and wants, and current resources.*

These aims were set out to reach a predetermined goal, that being the concept of a new ticketing system. Through the various manners of methodology, these being:

- *computer files, internet, interviews, articles, visual observations, letters/faxes, books and surveys.*

Of these methods employed all proved to be successful except for book research, where knowledge was hard to obtain or condense to become relevant.

Many candidates indicated that they could not assess the viability yet clearly had established enough data from their research with which to make a reasoned judgement, or had made contact with enough external evaluators to justify the viability, yet chose not to.

One example of a candidate who managed this well is shown below.

Viability of the Proposed Development

The proposed business venture of producing and distributing Custom Body Styling Kits is viable. All the research areas including survey questionaries, distributors, fibreglass experts, self investigation and financial advice has proven that the proposed development would be achievable. I know that the business would be viable by analysing financial projections compiled and advice from financial advisers. A small loan for a business has been approved by a bank manager (see appendix 3 financial statement small loan approval).

This was supported by an Appendix including business plan, loan application, letters of support for the information of markers.

Or another example:

Viability of the proposal development

In terms of market needs, cost, and availability of resources the viability of the specialised study is that the market needs were used to identify what the consumers wanted in terms of their needs and wants, which includes price, colour and appearance. The viability in terms of cost is that the specialised study makes it clear that under the investigation of the pricing strategy the cost of the garments have been carefully thought through in terms of the environment and whether the garments were of good quality that they can be worn time and time again.

It is achievable as it has been throughout the specialised study and the proposal. Throughout the development of the proposal it was made clear that the specialised study would be useful to undergo a deeper look into the rest of the specialised study. This is known by developing the study. Throughout the study methods of research and investigation and the fact of working out what others want has made it clear that it is known that this specialised study is achievable.

Potential impact on society and environment and associated ethical considerations

Many candidates showed a lack of breadth in their interpretation of societal impact, environment and ethics. Most concentrated upon global issues which in the main made the task very difficult for them.

A broader understanding is shown in the following example:

There are several possible impact on society:

- *My product will lead to people becoming more creative*
- *Mix'n match dressing concept will allow greater wear thus allowing people to have more outfits for a smaller price*
- *Body enhancing dressing concept allows people to learn more about personal dressing and the styles that suit them*
- *Flexibility and versatility of range will provide ease of dressing*
- *Classical nature of styles and colour scheme will mean that clothes will be worn longer thus reducing the clothing obsolescence factor*

etc.

General Comments

Teachers are well advised to be sure that candidates carry out their work independently or recognise external input into their work by citing sources more clearly. Group projects are not appropriate for either The 2 Unit Major Design Project or the 3 Unit Specialised Study. Candidates and teachers must ensure that submissions are clearly the work of the candidate and where other resources are used they are clearly cited and receive due recognition.

Specialised Study Check List 1996

Table.....	Day.....
Marker.....	Date.....

Centre Number																				
Candidate Number																				

Extract																				
Proposal Relationship between Spec Study and 2UMDP																				
Justification for the Spec Study																				
Aims of the Spec Study																				
Criteria to Evaluate the Success of the Spec Study																				
PROPOSAL /5																				

Methodology Use a Range of Methodologies																				
Critical Analysis of Collected Data																				
Generation, Testing and Modification of Ideas																				
Description and Justification of Resources used																				
Description and Justification of Processes undertaken																				
METHODOLOGY /15																				

End Result Synthesis of ideas leading to the end result																				
Critical Analysis of; effectiveness of study, viability of proposed development																				
potential impact on society and environment, associated ethical considerations.																				
END RESULT /10																				

TOTAL /30																				