

**ADVANCED SUBSIDIARY GCE
DESIGN AND TECHNOLOGY**

2518/IT

PRODUCT DESIGN/SYSTEMS AND CONTROL TECHNOLOGY

Systems Case Study Context

INSTRUCTIONS FOR TEACHERS

JUNE 2008

To be opened on receipt



INFORMATION FOR CENTRES

CONTEXT: THE USE OF SYSTEMS WITHIN THE CONTEXT OF MANUFACTURING

- Page 2 of this sheet includes further guidance on the above theme to assist teachers in the preparation of their candidates for this module.
- These suggestions are for guidance only and are not intended to be prescriptive or exclusive. They are presented as possible starting points for the interpretation of the Context.
- Teachers are reminded of the need to guide candidates in their choice of system or sub-system, within the set Context, to ensure that it will allow sufficient opportunities to meet the assessment criteria and that the report can be produced in the time available. OCR recommends that 20 hours should be spent on this Unit and that the report should comprise approximately 2000 words, together with referenced research material.
- Candidates must ensure that their case study is presented in a structured format which accurately follows the assessment criteria. To assist candidates in this, Assessment Criteria Insert Sheets accompany this notice. Details of their use are given on the front cover authentication sheet (page 3 of this booklet). This authentication sheet must be attached to each case study.
- Full details of the criteria to be met are provided in the specification.
- An electronic version of this notice is available on the OCR website www.ocr.org.uk.
- The candidate's work will be externally marked by OCR.

This document consists of **16** printed pages.

The use of systems within the context of MANUFACTURING.

A **system** is a set of devices or things (or activities or parts or groups of components) which are connected and work in conjunction with each other to perform a specific function (task). In the context of this case study Manufacturing can be taken to mean 'making products for customers' and those products may be manufactured in any context.



As a guide, opportunities for study may be derived from areas such as:

- **Systems used in Manufacturing/Production.** The flow of a raw material through the manufacturing process, systems in place to ensure quality control during production. Systems used to ensure consistency during production in industry. Systems used to minimise waste and energy use during production.
- **Systems used to control the disposal of waste during the production process.** Systems to dispose of or recycle hazardous and specialist waste.
- **Systems for moving large quantities of raw materials or products around.** Lifting and carrying systems.
- **Systems used for ordering components and monitoring stock levels.** e.g. use of ICT to monitor stock levels, J.I.T. manufacturing systems.
- **Systems for the delivery of manufactured products to retailers.** e.g. distribution and logistics systems; quality assurance and quality control systems in the delivery of food or textile products.
- **Systems to ensure the security, comfort, and safety of staff in the manufacturing industry.** Systems to design, provide and maintain staff uniforms and identification; personal protection systems for staff operating machinery; systems to ensure the comfort and safety of staff when handling products that maybe heavy or hazardous, systems in place to ensure protection against fire; control of air temperature, lighting.
- **Systems to evacuate staff from premises in difficult circumstances.** e.g. emergency procedures in case of fire or any other major incident, e.g. chemical spillage.
- **Systems for the maintenance of premises used for manufacture.** e.g. control of quality and temperature of the air, e.g. heating and air conditioning. Maintenance systems to ensure safety of equipment and machinery.
- **Security systems to protect premises against theft or fire.** Use of CCTV, Alarms, etc.
- **Communication systems.** e.g. Signage systems used to ensure health and safety procedures or fire regulations are followed in premises used for manufacture.

It is important that candidates have access to the system to gain primary and secondary sources of information before starting their study.

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (OCR) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

OCR is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.

**ADVANCED SUBSIDIARY GCE
DESIGN AND TECHNOLOGY
PRODUCT DESIGN/SYSTEMS AND CONTROL TECHNOLOGY**

2518

Systems Case Study

Submission by **THURSDAY 15 MAY 2008**



Candidate Forename

Candidate Surname

Centre Number

--	--	--	--	--

Candidate Number

--	--	--	--

- This authentication sheet is to be signed by the supervising teacher and candidate in the spaces provided, and must be securely attached as the front cover of the System Case Study.
- The System Case Study should be presented for assessment in A4 paper format.
- The candidates must ensure that the Assessment Criteria insert sheets are securely bound into the System Case Study, at the beginning of each sub-section, to clearly identify their response to each sub-section. The insert sheets indicate to the examiner where the sole evidence for each of the criteria will be found. Assessment Criteria 5.1 Quality of written and graphical communication is marked throughout the System Case Study and will not therefore have an insert sheet.
- Candidates are reminded that the System Case Study should be approximately 2000 words together with graphical information.
- The System Case Study is an examination script and upon payment of a fee can be returned to candidates, if requested, during the Autumn term in the examination year.
- Candidates who wish to use their System Case Study for interview or competition should make a copy prior to submission for assessment.
- The total number of marks for this Unit is **90**.

Authentication by the candidate

I declare that the work submitted is my own. Any sources I have used, particularly from the Internet, are acknowledged in the bibliography.

Signature Date

Authentication by the teacher

I declare that, to the best of my knowledge, the work submitted is that of the candidate concerned. I have attached details of any assistance given beyond that which is acceptable under the scheme of assessment.

Signature Date

1 SYSTEM CHOICE, OBJECTIVES AND RESEARCH PLAN

18 marks

1.1 System choice and nature of the system

6 marks

ASSESSMENT CRITERIA	MARKS
<p>Selects an appropriate and challenging system to study within the set context and time allowed.</p> <p>Outlines clearly the nature of the system and gives a clear indication of how it fits within the wider context.</p>	<p>5–6</p>
<p>Selects an appropriate system to study, within the set context and time allowed, which offers reasonable challenge.</p> <p>Outlines the more obvious elements of the system and gives some indication of how it fits within the wider context.</p>	<p>3–4</p>
<p>Selects an appropriate system to study, within the set context and time allowed, which offers little challenge.</p> <p>Presents only a superficial outline of elements of the system and gives little indication of how it fits within the wider context.</p>	<p>0–2</p>

The suggested number of pages for this section is: 1

Guidance for candidates:

- Ensure it is a system not a product.
- Set the scene and introduce the topic to the reader.
- Explain why the system is appropriate, including access to the system.
- Explain why the system is challenging.
- Provide a system diagram including any sub-systems.
- State the function or purpose of the system.
- Provide details of the wider context.

This sheet must be inserted at the start of the appropriate section

1.2 Objectives and sources of information

9 marks

ASSESSMENT CRITERIA	MARKS
<p>Presents detailed information about the objectives of the study with a detailed analysis of the main elements in the system and the criteria that it fulfils.</p> <p>Identifies clearly, several sources of primary and secondary information; why they are important to the objectives of the study and appropriate specific techniques for obtaining this information.</p>	7–9
<p>Presents some information about the objectives of the study with some analysis of the more obvious elements involved in the system with identification of the main criteria that it meets.</p> <p>Identifies the more obvious primary and secondary sources of information with some awareness of their importance to the objectives of the study and appropriate techniques for obtaining this information.</p>	4–6
<p>Presents little information about the objectives of the study with little analysis of the elements in the system and limited or superficial criteria that the system meets.</p> <p>Identifies few sources of information with little awareness of their importance to the objectives of the study and limited techniques for obtaining this information.</p>	0–3

The suggested number of pages for this section is: 2

Guidance for candidates:

- Give the aim and value of the study and to whom.
- State the expected findings and end result of the study.
- List the objectives – specific issues to be addressed.
- Identify the key elements of the system, the crucial parts.
- Give details of the function of the system and sub systems.
- Identify key factors to use to assess the effectiveness of the system.
- Give details of specific information required and the sources of this information.
- State whether the sources are primary or secondary, their importance, and the specific research technique.

This sheet must be inserted at the start of the appropriate section

1.3 Research plan

3 marks

ASSESSMENT CRITERIA	MARKS
Produces a detailed plan for obtaining relevant research information with an indication of timescales.	3
Produces a reasonable plan for obtaining relevant research information with some indication of timescales.	2
Shows little evidence of a plan for obtaining relevant research information with little or no indication of timescales.	0–1

The suggested number of pages for this section is: 1

Guidance for candidates:

Give a stage-by-stage plan for gathering the information.
 Possibly present the plan using a flow chart or table.
 Include timescales and space for recording progress.

This sheet must be inserted at the start of the appropriate section

2 RESEARCH AND RECORDING OF INFORMATION

27 marks

2.1 Range of information

12 marks

ASSESSMENT CRITERIA	MARKS
Obtains a wide range of relevant information relating to the chosen system from primary and secondary sources and presents detailed evidence of these sources in a bibliography.	9–12
Obtains an adequate range of relevant information relating to the chosen system from primary and secondary sources and presents reasonable evidence of these sources in a bibliography.	5–8
Obtains only limited information relating to the chosen system from a few more obvious sources and presents some evidence of these sources in a bibliography.	0–4

The suggested number of pages for this section is: 7

Guidance for candidates:

NB Complete with reference to Section 2.3

Ensure first hand contact with the system or those involved with the system.
 Use primary and secondary sources.
 Include a Bibliography – a list of sources including books, people, websites...
 Clearly indicate what you have done yourself and what others have provided for you.
 Obtain a range of viewpoints that will be needed to assess the effectiveness of the system.
 Information should be relevant, specific, detailed, and include technical aspects.

This sheet must be inserted at the start of the appropriate section

2.2 Evaluation of progress

3 marks

ASSESSMENT CRITERIA	MARKS
Evaluates and records progress thoroughly, adapting the original plan if necessary to meet new challenges.	3
Shows some awareness of the need to evaluate and record progress, making changes to the original plan if necessary.	2
Shows little awareness of the need to evaluate and record progress or to make changes to the original plan if necessary.	0–1

The suggested number of pages for this section is: 0.5

Guidance for candidates:

Record your progress in obtaining the information required.
 Refer to the original Research Plan (1.3).
 State what worked well – or did not work well – and why.
 List gaps in the information and how they will be filled.
 List changes to original Research Plan.

This sheet must be inserted at the start of the appropriate section

2.3 Editing of information

12 marks

ASSESSMENT CRITERIA	MARKS
Provides evidence of creative editing, summarising, annotating and referencing of information, suitable for later analysis.	9–12
Provides some evidence of editing, summarising, annotating and referencing of information, suitable for later analysis.	5–8
Provides limited evidence of editing, summarising, annotating and referencing of information, suitable for later analysis.	0–4

The suggested number of pages for this section is: 0.5

Guidance for candidates:

NB This refers to information recorded in Section 2.1 only

Summarise the editing that has been carried out in Section 2.1.

Include page numbers.

Annotate photographs and drawings.

Select, sort and record relevant information logically.

Consider the target audience of the final 'report'.

Use charts, diagrams and visual material for easy reference.

Use and cross-reference to an Appendix for supporting documentation.

Integrate drawings and photographs in the body of the text.

This sheet must be inserted at the start of the appropriate section

3 ANALYSIS OF INFORMATION AND CONCLUSIONS

24 marks

3.1 Analysis of information

9 marks

ASSESSMENT CRITERIA	MARKS
Detailed and perceptive analysis of edited research material and key issues, such as management, quality assurance and control.	7–9
Reasonable analysis of edited research material and key issues, such as management, quality assurance and control.	4–6
Superficial analysis of edited research material and limited understanding of key issues, such as management, quality assurance and control.	0–3

The suggested number of pages for this section is: 2

Guidance for candidates:

- Compare information and results from different sources.
- Use charts, graphs and diagrams to contrast and compare.
- Analyse (break down) the key issues and key elements of the system looked at.
- Discuss and give your opinion on information gained.

This sheet must be inserted at the start of the appropriate section

3.2 Analysis of system

6 marks

ASSESSMENT CRITERIA	MARKS
Identifies in detail the effectiveness of the system and any sub systems with reference to the original objectives.	5–6
Identifies in some detail the effectiveness of the system and any sub systems with some reference to the original objectives.	3–4
Identifies in a superficial way the effectiveness of the system and any sub systems with little or no reference to the original objectives.	0–2

The suggested number of pages for this section is: 2

Guidance for candidates:

- Identify the effectiveness of the system and any sub systems – based on the information gained.
- Identify aspects of the system that work or do not work well.
- Use annotated diagrams to refer to specific parts of the system.
- Use the objectives stated in 1.2 as the framework for comments.
- Comment on and discuss specific and technical details.
- Include the candidate's own opinion integrated with expert opinion.

This sheet must be inserted at the start of the appropriate section

3.3 Conclusions

9 marks

ASSESSMENT CRITERIA	MARKS
Presents clear and detailed conclusions and identifies the strengths and weaknesses of the system studied.	7–9
Presents reasonably clear conclusions and identifies the more obvious strengths and weaknesses of the system studied.	4–6
Presents only superficial conclusions.	0–3

The suggested number of pages for this section is: 1

Guidance for candidates:

Describe specific strengths and weaknesses that will form the basis for proposals.
 Identify specific strong aspects that need no improvement.
 Identify specific weak aspects that are in need of improvement.
 Support your conclusions with diagrams and photographs as appropriate.

This sheet must be inserted at the start of the appropriate section

4 PROPOSALS AND CASE STUDY EVALUATION

15 marks

4.1 Proposals

12 marks

ASSESSMENT CRITERIA	MARKS
<p>Presents creative and innovative proposals, based upon their research data, of realistic and detailed ways in which the system studied might be improved and demonstrates clearly how the system is already so effective.</p> <p>Technical details and cost implications are included.</p>	9–12
<p>Presents some reasonable proposals, based upon their research, of realistic ways in which the system studied might be improved and shows some understanding of how the system is already so effective.</p>	5–8
<p>Presents superficial proposals for improving the system studied, which lack support from their research, and shows little or no understanding of why the system is already so effective.</p>	0–4

The suggested number of pages for this section is: 2

Guidance for candidates:

Follow on directly from the conclusions.

Suggest realistic ways in which any weak aspects identified could be improved or demonstrate how the system is already effective.

Present one or two creative and innovative proposals in fuller detail rather than several proposals with little detail.

Include technical or component details, time and cost implications.

Show details using annotated photographs, diagrams, sketches.

Obtain comments on feasibility from an 'expert'.

Show how the proposals will make the system more effective.

This sheet must be inserted at the start of the appropriate section

4.2 Case study evaluation

3 marks

ASSESSMENT CRITERIA	MARKS
Presents a detailed and objective evaluation of the case study and identifies several aspects that could be improved in future work.	3
Presents a reasonable evaluation of the case study and shows some awareness of how future work could be more effective.	2
Presents a superficial evaluation of the case study and shows little awareness of how future work could be more effective.	0–1

The suggested number of pages for this section is: 1

Guidance for candidates:

Comment on the effectiveness of the study.
 State aspects of the study that could have been done better.
 Refer to specific sources of information and specific study sections.
 Comment on your success in meeting your objectives for the study.

This sheet must be inserted at the start of the appropriate section

5 QUALITY OF WRITTEN AND GRAPHICAL COMMUNICATION

6 marks

5.1 Quality of written and graphical communication

6 marks

ASSESSMENT CRITERIA	MARKS
<p>Presents relevant information and arguments in a clear and concise manner, using appropriate technical phrases and high quality written communication skills.</p> <p>Demonstrates a creative use of a variety of appropriate communication techniques, including ICT, to produce a visually interesting report.</p>	5–6
<p>Presents mostly relevant information and arguments in a reasonably clear and concise manner, with limited use of technical phrases and reasonable written communication skills.</p> <p>Uses a more limited range of communication techniques, including ICT, which results in a reasonably clear and visually interesting report.</p>	3–4
<p>Presents some relevant information and arguments in a manner that lacks a clear and concise approach, with little or no use of technical phrases and basic written communication skills.</p> <p>Uses few techniques, other than word processing, to produce a report with limited visual impact and clarity.</p>	0–2

The suggested number of pages for this section is: 0

Guidance for candidates:

Key words in the criteria:

concise, clear, relevant, variety, appropriate, creative, use of ICT.

NB 5.1 Quality of written and graphical communication is assessed in all sections of the study.

This is not an insert sheet.

2518 System Case Study (for first assessment in June 2005)

	Marks	Pages	Guidance for candidates
1.1 SYSTEM CHOICE AND NATURE OF THE SYSTEM	6		
Selects an appropriate and challenging system to study within the set context and time allowed. Outlines clearly the nature of the system and gives a clear indication of how it fits within the wider context.	5-6	1	Ensure it is a system not a product. Set the scene and introduce the topic to the reader. Explain why the system is appropriate, including access to the system. Explain why the system is challenging. Provide a system diagram including any sub-systems. State the function or purpose of the system. Provide details of the wider context.
Selects an appropriate system to study, within the set context and time allowed, which offers reasonable challenge. Outlines the more obvious elements of the system and gives some indication of how it fits within the wider context.	3-4		
Selects an appropriate system to study, within the set context and time allowed, which offers little challenge. Presents only a superficial outline of elements of the system and gives little indication of how it fits within the wider context.	0-2		
1.2 OBJECTIVES AND SOURCES OF INFORMATION	9		
Presents detailed information about the objectives of the study with a detailed analysis of the main elements in the system and the criteria that it fulfils. Identifies clearly, several sources of primary and secondary information; why they are important to the objectives of the study and appropriate specific techniques for obtaining this information.	7-9	2	Give the aim and value of the study and to whom. State the expected findings and end result of the study. List the objectives – specific issues to be addressed. Identify the key elements of the system, the crucial parts. Give details of the function of the system and sub systems. Identify key factors to use to assess the effectiveness of the system. Give details of specific information required and the sources of this information. State whether the sources are primary or secondary, their importance, and the specific research technique.
Presents some information about the objectives of the study with some analysis of the more obvious elements involved in the system with identification of the main criteria that it meets. Identifies the more obvious primary and secondary sources of information with some awareness of their importance to the objectives of the study and appropriate techniques for obtaining this information.	4-6		
Presents little information about the objectives of the study with little analysis of the elements in the system and limited or superficial criteria that the system meets. Identifies few sources of information with little awareness of their importance to the objectives of the study and limited techniques for obtaining this information.	0-3		
1.3 RESEARCH PLAN	3		
Produces a detailed plan for obtaining relevant research information with an indication of timescales.	3	1	Give a stage-by-stage plan for gathering the information. Possibly present the plan using a flow chart or table. Include timescales and space for recording progress.
Produces a reasonable plan for obtaining relevant research information with some indication of timescales.	2		
Shows little evidence of a plan for obtaining relevant research information with little or no indication of timescales.	0-1		
1 System Choice, Objectives and Research Plan	18	4	
2.1 RANGE OF INFORMATION	12		
Obtains a wide range of relevant information relating to the chosen system from primary and secondary sources and presents detailed evidence of these sources in a bibliography.	9-12	7	NB Complete with reference to Section 2.3 Ensure first hand contact with the system or those involved with the system. Use primary and secondary sources. Include a Bibliography – a list of sources including books, people, websites... Clearly indicate what you have done yourself and what others have provided for you. Obtain a range of viewpoints that will be needed to assess the effectiveness of the system. Information should be relevant, specific, detailed, and include technical aspects.
Obtains an adequate range of relevant information relating to the chosen system from primary and secondary sources and presents reasonable evidence of these sources in a bibliography.	5-8		
Obtains only limited information relating to the chosen system from a few more obvious sources and presents some evidence of these sources in a bibliography.	0-4		
2.2 EVALUATION OF PROGRESS	3		
Evaluates and records progress thoroughly, adapting the original plan if necessary to meet new challenges.	3	0.5	Record your progress in obtaining the information required. Refer to the original Research Plan (1.3). State what worked well - or did not work well - and why. List gaps in the information and how they will be filled. List changes to original Research Plan.
Shows some awareness of the need to evaluate and record progress, making changes to the original plan if necessary.	2		
Shows little awareness of the need to evaluate and record progress or to make changes to the original plan if necessary.	0-1		
2.3 EDITING OF INFORMATION	12		
Provides evidence of creative editing, summarising, annotating and referencing of information, suitable for later analysis.	9-12	0.5	NB This refers to information recorded in Section 2.1 only Summarise the editing that has been carried out in Section 2.1. Include page numbers. Annotate photographs and drawings. Select, sort and record relevant information logically. Consider the target audience of the final 'report'. Use charts, diagrams and visual material for easy reference. Use and cross-reference to an Appendix for supporting documentation. Integrate drawings and photographs in the body of the text.
Provides some evidence of editing, summarising, annotating and referencing of information, suitable for later analysis.	5-8		
Provides limited evidence of editing, summarising, annotating and referencing of information, suitable for later analysis.	0-4		
2 Research and Recording of Information	27	8	
3.1 ANALYSIS OF INFORMATION	9		
Detailed and perceptive analysis of edited research material and key issues, such as management, quality assurance and control.	7-9	2	Compare information and results from different sources. Use charts, graphs and diagrams to contrast and compare. Analyse (break down) the key issues and key elements of the system looked at. Discuss and give your opinion on information gained.
Reasonable analysis of edited research material and key issues, such as management, quality assurance and control.	4-6		
Superficial analysis of edited research material and limited understanding of key issues, such as management, quality assurance and control.	0-3		
3.2 ANALYSIS OF SYSTEM	6		
Identifies in detail the effectiveness of the system and any sub systems with reference to the original objectives.	5-6	2	Identify the effectiveness of the system and any sub systems – based on the information gained. Identify aspects of the system that work or do not work well. Use annotated diagrams to refer to specific parts of the system. Use the objectives stated in 1.2 as the framework for comments. Comment on and discuss specific and technical details. Include the candidate's own opinion integrated with expert opinion.
Identifies in some detail the effectiveness of the system and any sub systems with some reference to the original objectives.	3-4		
Identifies in a superficial way the effectiveness of the system and any sub systems with little or no reference to the original objectives.	0-2		
3.3 CONCLUSIONS	9		
Presents clear and detailed conclusions and identifies the strengths and weaknesses of the system studied.	7-9	1	Describe specific strengths and weaknesses that will form the basis for proposals. Identify specific strong aspects that need no improvement. Identify specific weak aspects that are in need of improvement. Support your conclusions with diagrams and photographs as appropriate.
Presents reasonably clear conclusions and identifies the more obvious strengths and weaknesses of the system studied.	4-6		
Presents only superficial conclusions.	0-3		
3 Analysis of Information and Conclusions	24	5	
4.1 PROPOSALS	12		
Presents creative and innovative proposals, based upon their research data, of realistic and detailed ways in which the system studied might be improved and demonstrates clearly how the system is already so effective. Technical details and cost implications are included.	9-12	2	Follow on directly from the conclusions. Suggest realistic ways in which any weak aspects identified could be improved or demonstrate how the system is already effective. Present one or two creative and innovative proposals in fuller detail rather than several proposals with little detail. Include technical or component details, time and cost implications. Show details using annotated photographs, diagrams, sketches. Obtain comments on feasibility from an 'expert'. Show how the proposals will make the system more effective.
Presents some reasonable proposals, based upon their research, of realistic ways in which the system studied might be improved and shows some understanding of how the system is already so effective.	5-8		
Presents superficial proposals for improving the system studied, which lack support from their research, and shows little or no understanding of why the system is already so effective.	0-4		
4.2 CASE STUDY EVALUATION	3		
Presents a detailed and objective evaluation of the case study and identifies several aspects that could be improved in future work.	3	1	Comment on the effectiveness of the study. State aspects of the study that could have been done better. Refer to specific sources of information and specific study sections. Comment on your success in meeting your objectives for the study.
Presents a reasonable evaluation of the case study and shows some awareness of how future work could be more effective.	2		
Presents a superficial evaluation of the case study and shows little awareness of how future work could be more effective.	0-1		
4 Proposals and Case Study Evaluation	15	3	
5.1 QUALITY OF WRITTEN AND GRAPHICAL COMMUNICATION	6		
Presents relevant information and arguments in a clear and concise manner, using appropriate technical phrases and high quality written communication skills. Demonstrates a creative use of a variety of appropriate communication techniques, including ICT, to produce a visually interesting report.	5-6	0	NB This is assessed in all sections of the study Key words in the criteria: <i>concise, clear, relevant, variety, appropriate, creative, use of ICT.</i>
Presents mostly relevant information and arguments in a reasonably clear and concise manner, with limited use of technical phrases and reasonable written communication skills. Uses a more limited range of communication techniques, including ICT, which results in a reasonably clear and visually interesting report.	3-4		
Presents some relevant information and arguments in a manner that lacks a clear and concise approach, with little or no use of technical phrases and basic written communication skills. Uses few techniques, other than word processing, to produce a report with limited visual impact and clarity.	0-2		
5 Quality of Written and Graphical Communication	6	0	
TOTAL	90	20	