General Certificate of Education
Ordinary Level

Syl

CDT: DESIGN AND COMMUNICATION 7048

For examination in November 2009

CDT: DESIGN AND COMMUNICATION

GCE Ordinary Level/SC (7048)

Available In The November Examination Only

INTRODUCTION

The syllabus is designed to lead to an examination for that part of the school curriculum identified as Design and Communication. It offers an examination for candidates who have followed a course of study which centrally figures problem-solving design activity involving practical manipulative work using a range of materials.

AIMS

The aims of the syllabus are the same for all students. The aims set out below describe the educational objectives of a course in Design and Communication. They are not listed in order of priority.

- To foster awareness, understanding, persistence and expertise in those areas of creative thinking which can be expressed and developed through investigation and research, planning, designing, realising and evaluating.
- To encourage the acquisition of a body of knowledge applicable to solving practical/technological problems operating through processes of analysis, synthesis and realisation.
- To stimulate the development of a range of appropriate graphical techniques and processes including model-making.
- To stimulate the development of a range of communication skills which are central to design, realisation and evaluation.
- To encourage students to relate their practical work to their personal interests and abilities.
- To promote the development of curiosity, enquiry, initiative, ingenuity, resourcefulness and discrimination.
- To offer a broad and balanced perspective of the range of technological applications in order to provide an understanding of their capabilities and limitations.
- To encourage technological awareness, foster attitudes of cooperation and social responsibility.
- To stimulate the exercising of value judgements of an aesthetic, technical and economic nature.

SCHEME OF EXAMINATION

Candidates must take papers 1 and 2

Paper 1 (2¾ HOURS)

The time allowed for this paper includes fifteen minutes reading time. The paper will be divided into two sections. The first section will require in-depth application of facts and the second will require candidates to apply reasoned consideration to direct problems of graphic communication.

Paper 2

Candidates will select a problem from the themes set by CIE during the year preceding the examination. The investigative folio answering a problem selected from the themes will be compiled by the candidate during a period of two terms. All evidence of problem solving and realisation will be contained in the folio. The maximum size of the folder should be A3.

Teachers may direct as much time as they wish for candidates to investigate their chosen theme. Candidates may seek help and guidance from their teacher as their investigation develops. Colour should be used where appropriate to aid clarity and presentation.

The folios will be marked by the candidates' teacher who will use the criteria given at the end of this syllabus. The forms necessary for the recording of marks are included at the end of this syllabus. Schools will be expected to send a representative sample of the folios to CIE, (via the Mauritius Examinations Syndicate for Centres in Mauritius) for moderation. A representative sample is usually taken to be ten folios from each Centre, but please see instructions re the procedures for external moderation at the end of this syllabus if there are more than 50 candidates. The ten folios in the sample should include those with the highest and lowest marks, with the remainder drawn from regular intervals in the rank order of marks. Where there are less than ten candidates, all folios should be submitted.

Paper	Type of paper	Duration	Weighting
1	Written paper	2¾ h	70%
2	Teacher-assessed coursework (Project)	-	30%

SYLLABUS CONTENT

Candidates should have experience of working with the following conventions:

PD 7308 Engineering Drawing for schools and colleges.
PD 7307 Graphic symbols for use in schools and colleges.
PD 7303 Electrical and electronic graphical symbols for use in schools and colleges.
BS 1192 Recommendations for building drawing practical.
BS 4058 Data processing flowchart symbols, rules and conventions.

	Candidates should be able to:
Orthographic projections	- give information or use given information in both first and third angle projection. Dimensions and drawings of detail and simple assemblies of parts from information given in orthographic or pictorial form will be required, including parts lists.
Sectional views	- select the most suitable section, draw whole or part sections taken on the principle vertical and horizontal planes.
Sketching	- understand and produce free-hand sketches which communicate ideas, thoughts and information from written, visual or tabular data, and presented in pictorial, formal pictorial, plane or orthographic modes.
Interpretation of Information	- read drawings and interpret given information.
Division	- divide lines and angles.
Geometrical figures	- understand the use of an appropriate geometrical construction in order to draw: regular plane linear shapes (triangles, quadrilaterals, pentagons, hexagons and octagons).
The circle	- understand parts of a circle and use appropriate geometrical construction in order to draw: circles, tangents and tangential arcs.
Ellipse	- construct ellipses by an accurate method. (Trammels will be permitted.)
Loci	- draw the paths of points in the manner of simple plane mechanisms. Linkages will have a maximum of four elements.
Presentation	- demonstrate use of shading, colouring and other techniques for emphasis. - apply an understanding of light, shade and shadow to give increased credibility to pictorial drawing. - communicate the material and surface finish of a given product.

Isometric	- produce isometric views of circles and arcs. Isometric scales will not be required.
Planometric	- produce planometric views of circles and arcs. No scaling will be required.
Perspective	- produce estimated perspective drawings using one or two vanishing points.
Oblique	- draw oblique views of circles and arcs (both cavalier and cabinet).
Exploded views	- draw exploded views of objects in line along one axis only. In the examination paper, however, information may be presented on more than one axis.
Use of drafting aids	- use drawing aids to develop good drafting techniques. Radius aids, flexi curves, ellipse aids, nut templates will be permitted in the examinations unless stated otherwise in particular questions. During their course candidates should have experience in the use of technical pens, templates, lettering and other stencils.
Geometrical loci	- draw the linear helix, the cycloid and simple plate cams (uniform velocity and retardation).
Developments	- draw developments of right prisms, cylinders, pyramids and cones (complete and truncated).
Intersections	- produce views of simple prisms and cylinders intersecting at right angles with axes in line.
Auxiliary views	- draw objects in first auxiliary views at set square angles (30°, 45° and 60°) including true shape of cut surfaces.
Convey information	- construct and interpret histograms, pie diagrams, bar charts and graphs from data provided in a tabular or matrix form to communicate quantity and distribution. Candidates will be expected to produce flow charts to describe processes, operations or assemblies.
Analysis of products	- analyse the construction and operation of uncomplicated products. - research, analyse and consult relevant sources of information. - recognise factors that will determine the preparation of a viable specification - synthesize and communicate proposals for solutions.

Control	- understand that most activities require so sort of control. - understand the term control system - understand that in order for a system to work it needs an INPUT CONTROL and OUTPUT. - make use of the systems approach when designing solutions to control problems (the systems approach is to be used to explain a control situation without going into detail of how it is to be done).

NOTES FOR GUIDANCE

In the areas of product analysis and control the most complex items that candidates would be expected to have experience of would be things such as:

a torch, a manually operated camera,
a bicycle, a small pocket radio.

It should be noted that knowledge about specific products will not be required in the terminal examinations but candidates will be expected to show their ability to analyse products as part of their project work.

It is not the intention that specific items in the areas listed below should be identified but rather that examples based on them should be used as a way of teaching and applying the knowledge and skills developed as a result of studying the core content of the syllabus.

The following lists offer suggestions for areas of study but they should not be considered definitive:

Signs

- on control panels
- directional
- in shops
- in streets

Symbols and logos

- on clothes
- on instruments and control panels
- on maps
- on products
- on road signs
- in vehicles
- used by companies and organisations

Packaging – candidates should be familiar with packaging used in ways such as the following:

- to protect items
- to communicate information about a product
- to advertise and help sell products

Examples of items to be packaged might include:

- food
- cosmetics
- toys
- small gift items
- small electrical products
- records, tapes and CDs

Lines and planes in projection – this area is covered by the sections on auxiliary views and orthographic projection.

ASSESSMENT CRITERIA FOR PROJECT

This paper presents the candidate with a number of problematic themes. The questions which pose these problems are open-ended with a low level of directiveness. The candidates should have a good deal of freedom to determine the length and nature of their involvement with each element required in this high level design/problem solving process.

(a) Problem identification

The candidates interpretation of the problem presented in a statement, i.e. the brief	Marks
The candidate has:	
failed to identify a suitable problem.	0
either (i) needed help to identify a problem, or (ii) had no help but the resulting problem is unsuitable for design development.	2
identified and described unaided a problem appropriate for design development.	5
Maximum marks available in this section:	**5**

(b) Research and analysis

The ordering of information relevant to the presentation of a solution	
The candidate's research:	
consists of copied material, without any evident purpose.	3
has not been initiated independently, or is incapable of forming a planned programme or the candidate has required considerable assistance and frequent direction.	6
has required significant initial assistance; thereafter little direction has been needed but the candidate has either concentrated on a narrow area or given only shallow attention to a wider field.	9
is well planned, broad and imaginative. The candidate has developed a programme without assistance and this has resulted in information being structured and effectively communicated.	15
Maximum marks available in this section:	**15**

(c) Specification for a possible solution

The candidate's recognition of those particular factors in research that will determine a specification for presenting a possible solution.	Marks
The candidate's specification:	
is not evident.	0
is very shallow.	2
is vague, not specific to the problem.	4
is not wholly specific, containing some irrelevant material.	6
is specific, but does not completely identify on all the constraints imposed in the problem.	8
is concise, definitive, and is drawn up with obvious reference to the preceding research and analysis.	10
Maximum marks available in this section:	**10**

(d) Proposals for a solution

The synthesis and communication of a number of proposals for a solution.	
The candidate's response in this area:	
is limited to a single unsupported proposal, the communication of which was largely effective.	5
is limited to a single proposal which is quite well supported and communicated in a reasonable manner; or a number of largely unsupported and similar proposals communicated in an uneffective manner.	10
consists of a number of distinct proposals which are unsupported and communicated in an ineffective manner.	15
consists of a number of distinct well-supported proposals which are communicated in an effective manner.	20
Maximum marks available in this section:	**20**

(e) Realisation

The realisation and presentation of a final solution.	Marks
The candidate's solution:	
is obviously not a viable solution but is recognisable as an attempt to define a solution.	8
is recognisable as a solution but can easily be faulted in respect of ideas, communication and quality or because it fails to meet the specification.	16
is incomplete and requires additional material to meet the specification in full, but has been presented in a form which is easily understood.	24
is substantially free of omission and for the most part fulfils the specification. It has been presented in a clear, descriptive manner.	32
is well conceived, clearly and attractively defined and fully satisfies the specification.	40
Maximum marks available in this section:	**40**

(f) Evaluation

Evaluation of the solution, considering the factors raised in (c).	
The candidate's evaluation is:	
for the most part irrelevant.	2
superficial.	4
an honest attempt to appraise the solution but lacks objectivity providing only unsupported judgement.	6
almost complete, consisting of some unsupported judgement.	8
thorough, objective, relevant and concise and provides useful material capable of further development.	10
Maximum marks available in this section:	**10**
Maximum marks available:	**100**

CAMBRIDGE
INTERNATIONAL EXAMINATIONS

CDT: DESIGN & COMM (7048/2)
COURSEWORK AS FORM
GCE vel

Please read the instructions overleaf before completing this form.

Centre Number		**Centre Name**		**November**	**2**	**0**		

Candidate Number	Candidate Name	Teaching Group/Set	(a) Problem Identification (max 5)	(b) Research & Analysis (max 15)	(c) Specification for Solution (max 10)	(d) Proposals for Solution (max 20)	(e) Realisation (max 40)	(f) Evaluation (max 10)	Total Mark (max 100)	Internally Moderated Mark (max 100)

Teacher completing this form (BLOCK CAPITALS)		Date	
Name of Moderator (BLOCK CAPITALS)		Date	

A. INSTRUCTIONS FOR COMPLETING COURSEWORK ASSESSMENT SUMMARY FORMS

1. Complete the information at the head of the form.

2. List the candidates in an order which will allow ease of transfer of information to a computer-printed Coursework mark sheet at a later stage (i.e. in candidate index numb e this is known; see item B.1 below). Show the teaching group or set for each candidate. The initials of the teacher may be used to indicate group or set.

3. Enter each candidate's marks on this form as follows:

(a) There are columns for individual skills; enter the marks initially awarded (i.e. before internal moderation took place).

(b) In the column headed 'Total Mark'; enter the total mark awarded before internal moderation took place.

(c) In the column headed 'Internally Moderated Mark', enter the total mark awarded *after* internal moderation took place.

4. Both the teacher completing the form and the internal moderator (or moderators) should check the form and complete and sign the bottom portion.

B. PROCEDURES FOR EXTERNAL MODERATION

1. Cambridge International Examinations (CIE) sends a computer-printed Coursework mark sheet to each centre in October showing the name and index number of each candidate. Transfer the total internally moderated mark for each candidate from this Coursework Assessment Summary form to the computer-printed Coursework mark sheet.

2. Despatch the top copy of the computer-printed Coursework mark sheet (MS1) to the Mauritius Examinations Syndicate (for Centres in Mauritius) or to CIE (for Centres in the rest of the world) in time to allow external moderation to take place. The deadline for receipt by the Ministry of this document is 31 October for the November examination.

3. Send samples of the candidates' work covering the full ability range, together with this form and the second copy of MS1, by 31 October for the November examination.

4. If there are 10 or fewer candidates submitting Coursework, send all the Coursework that contributed to the final mark for every candidate.

5. If there are more than 10 candidates send the Coursework that contributed to the final mark for the number of candidates as follows. The marks of the candidates' work selected should cover the whole mark range with marks spaced as evenly as possible from the top mark to the lowest mark.

number of candidates entered	Number of candidates whose work is required
11-50	10
51-100	15
above 100	20

6. If different teachers have prepared classes, select the samples from the classes of different teachers.

7. CIE reserves the right to ask for further samples of Coursework.