

UNIVERSITY OF MALTA

**MATRICULATION CERTIFICATE EXAMINATION
ADVANCED LEVEL**

GRAPHICAL COMMUNICATION

MAY 2012

EXAMINERS' REPORT

**MATRICULATION AND SECONDARY EDUCATION
CERTIFICATE EXAMINATIONS BOARD**

Part 1: Statistical Information

The written examination consists of two papers, each of three hours duration. A candidate's final result is determined by combining the scores obtained in Paper I and Paper II with the marks earned in a CAD portfolio compiled during the two-year course. Each of the written papers carries 40% of the total marks, with the CAD portfolio attracting the remaining 20%.

A total of 28 candidates registered for the examination. Twenty-seven candidates sat for the examination, the other candidate being reported absent.

The distribution of grades awarded in the May 2012 session is given in Table 1.

Grade	A	B	C	D	E	F	Abs	Total
Number	2	3	5	4	5	8	1	28
% of Total	7.1	10.7	17.9	14.3	17.9	28.6	3.6	100

Table 1

Part 2: Comments regarding performance

This section gives comments on the performance of the candidates in each of the questions set in the two papers. They are intended to aid teachers and candidates in preparation for future examinations.

Paper 1

Six questions were set and candidates had to answer any five. All questions carried a total of 20 marks.

Question 1 – Isometric projection

The question consisted in the isometric projection of a trophy. The majority of the candidates constructed the required isometric scale correctly but failed to complete the plan. Key suitable points had to be assumed on the 60° cut and be located in the plan using the horizontal section method. Appropriate horizontal and vertical distances, picked from the elevation and plan, were all that was required to locate the key points on the isometric projection. For some this proved a daunting task. Only a small number of candidates knew how to find the radius to represent the spherical base.

Question 2 – Palmate Section

This was the most popular question, with half the candidates scoring very good marks. The remaining however could not get started. Points had to be assumed on the flat 100mm long surface and then located on the auxiliary elevation using the method of horizontal slices. Appropriate distances picked between X1Y1 and the auxiliary elevation, and measured off from XY, would then give rise to the required ordinary elevation. Low-scoring candidates reflected their poor knowledge on the technique of auxiliary views.

Question 3 – Screw threads

The question featured the drawing of a matched pair of male and female square threads. Although this was the second most popular question, a very poor performance was recorded. Only three candidates scored more than half the full marks. The internal thread presented the greatest difficulties, with many students not even attempting it. Some students reproduced the example of matched threads included with the question, taking no heed whatsoever of the requested specifications. Whilst the question clearly asked for square threads, most answers showed vee threads. A lot of students still do not distinguish between the pitch of the thread and the lead of the thread in a multi-start thread.

Question 4 – Oblique plane

This was the second least favourite question, but the majority did well scoring more than a pass mark. Two candidates even scored full marks. The examiners are however struck by how the majority of the candidates answered the first part of the question and then rushed to answer the final section, ignoring the intermediate parts completely. The question was built in a graded manner with one part leading to the next. Students were specifically asked to state whether two lines intersected the oblique plane, but only a minority cared to answer in a direct way using a simple statement. It seems that some candidates expect the examiner to deduce the answer they want to give from their work. This is wrong and unacceptable and clear specific questions call for corresponding specific answers.

Question 5 - Gears

This question was attempted by only 11 candidates making it the least favourite. The majority obtained very good scores, with one candidate even achieving full marks. The question featured a three-gear train, where a pinion drives a wheel through the action of an idler. The exercise required the candidates to draw in mesh, only those **two** spur gears that brought about the speed reduction. In spite of this being explicitly stated, many candidates drew all three gears wasting precious time that could have been allocated to other questions. Those who failed to score good marks found difficulty interpreting the

given values of the centre distance and gear ratio to derive two simple simultaneous equations in m (module) and t (number of teeth) and solve them.

Question 6 – Graphical statics

The question featured a simply-supported beam carrying two uniformly distributed loads (udl's) and a point load. Twenty-two attempted the question, but only eight scored more than half the full marks. Most failing candidates were unable to consider the udl's in the proper way. Udl's need to be spread along the relevant portion of the beam, as point loads concentrated in the middle of each one metre length.

Another common pitfall was the production of inadequate force diagrams. In most cases, the line segments representing the forces as vectors carried no arrowheads.

In general a poor performance was registered.

Paper II

Five questions were set in all and the candidates had to answer question 1 (compulsory) and any other three. The compulsory question was allotted 34 marks whereas the other four carried 22 marks each.

Question 1 - Perspective drawing

This compulsory question featured an *estimated two-point perspective drawing* of an entrance hall of a house. The overall performance was good with more than half the candidates scoring beyond half the full marks.

Most candidates did produce preliminary sketches, but there were still a few who ignored this step altogether. Such sketches are necessary to help the candidates approach the exercise in a methodical and structured way. These drawings still need to reflect the proportions of size of the exercise in hand.

The construction of a grid, that is faithful to the required drawing system and representative of the proportions of size of the exercise in hand, is a crucial stage towards a successful illustration. In some cases the method used to construct the perspective grid was hardly recognisable.

Some candidates did not employ colour, tone and texture to enrich the illustration. And sample materials were not always suggested.

Question 2 – Design process applied to the depiction of a set of instruction

The question employed the key stages of the design process towards the design of ideograms to represent a set of instructions. This question attracted an uptake of twenty students with fifteen scoring more than a pass mark.

The low-scoring candidates did not produce keywords/short phrases to identify the important features of the required ideogram. Most of these even ignored the following step of graphical analysis, doing away with the sketches and rushing directly towards the final solution. Besides the associated loss of marks, such unstructured and unexplored solutions only deliver mediocre ideograms of poor or limited quality.

The use of colour, tone and texture was not always practised.

Question 3 – The design of an ideogram to support a poster

Like question 2, question 3 was attempted by 20 candidates. Of these, 15 scored more than a pass mark, but no one got full marks. Candidates had to follow the structured steps of the design process to develop ideogrammatic images that help discourage drivers use handheld mobile phones whilst driving.

Unsuccessful candidates failed to produce simple, big, relevant symbols that are easily read from a distance. 'Relevant symbols' mean images that readily identify the theme being studied. These can be successfully developed following the preliminary design steps of the 'written analysis', 'graphical analysis' and 'graphical synthesis'. The final design is then constructed out of quality linework, that is suitably enhanced using appropriate colours.

Question 4 – Graphical comparison and representation

Attempted by 16 candidates this was the second least popular question. The performance registered was very poor, with only 3 candidates obtaining a pass mark or more. Nobody scored full marks.

The candidates were asked, in two separate parts, to represent and compare graphically, in 3D and 2D, particular features of a sample of school backpacks. Most of the solutions failed to represent effectively the theme of school backpacks. And the given data was not suitably presented in an innovative and imaginative form.

Solutions were expected to compare *successfully* different backpacks without undue effort. Such 'successful' comparison may be facilitated by incorporating the use of colours. Contrasting colours, for example, may be used to distinguish between the same features of different adjacent backpacks on a single chart. On the other hand, the same

colour might be employed on different charts to represent different features of the same backpack.

As students of graphical communication, the candidates should strive to limit the use of words and instead employ graphics. The least one can do is to try and develop a symbol to represent graphically the feature being compared. The symbol would then be strategically placed alongside the plot that draws the comparison.

And whenever plots are employed to represent/compare data, the use of a proper scale becomes necessary. The axes of the plots then need to be annotated with key subdivision data values to improve legibility.

Question 5 – Design of touristic symbols and leaflet front page

This question registered the best performance. Of the eleven candidates that attempted the question, only one failed to score a pass mark.

Ideograms were to be developed to represent touristic attractions/activities. Successful answers used a common style for the different symbols. A common shape format, say rectangular, a common background colour, say yellow, and a common kind of border, say a thin band, would for instance, produce a suitable style. Black (and white, where appropriate) symbols, placed in the centre, would then readily stand out making the ideograms eye-catching.

In some cases, the design of a leaflet front page requested in the second part of the question was completely ignored. Different page layouts that facilitate the depiction of the symbols created earlier were to be explored.

**The Chairperson
Board of Examiners
July 2012**