

UNIVERSITY OF MALTA

**THE MATRICULATION CERTIFICATE EXAMINATION
SEC LEVEL**

DESIGN AND TECHNOLOGY

May 2013

EXAMINERS' REPORT

**MATRICULATION AND SECONDARY EDUCATION
CERTIFICATE EXAMINATIONS BOARD**

SEC DESIGN & TECHNOLOGY
MAY 2013 SESSION
EXAMINERS' REPORT

General Information

For the 2013 session, a total of 328 candidates registered to sit for the examination; 154 candidates opted for Paper 2A and 174 chose to sit for Paper 2B. Of these 11 candidates were absent for Paper 2B. These figures show that there was an increase of 15 candidates for Paper 2A and an increase of 4 for Paper 2B over the numbers who entered the examination for the previous year. This increase cannot be said to be significant and must be seen with some disappointment considering the steady increase of previous years.

Four (4) candidates who enrolled to sit Paper 2A did not present extended projects for marking. Twenty two (22) candidates who enrolled to sit Paper 2B did not present extended projects for marking.

Part 1: Statistical Information

Table 1: Distribution of the candidates grades for Sec Design and Technology May 2013

GRADE	1	2	3	4	5	6	7	U	ABS	TOTAL
PAPER A	9	18	21	21	10			75	0	154
PAPER B				20	19	60	36	28	11	174
TOTAL	10	20	24	25	15	6	36	103	11	328
% OF TOTAL	3.0	6.1	7.3	7.6	4.6	1.8	11.0	31.4	3.4	100.0

General comments on the extended project.

The work of 117 candidates from 13 schools was moderated. The general comments are based on the moderated work.

- The correct mark sheet must always be used to present the marks of the extended project. That sheet can be downloaded from the MATSEC site.
- A few practical artefacts were submitted without a folio. This means the candidates cannot achieve a pass mark on the evidence provided.
- Design folios were generally well presented although it is noted that research and specifications continue to cause some problems to the candidates.
- Electronic projects demand a circuit diagram. This was not always provided in the current session.
- Where questionnaires are used, the results should be fully communicated. The reader of the folio should know the quantity of questionnaires given out as well as the total level of response. In some projects it would also be informative to have the groups of respondents listed.
- Testing was too often omitted from the folio work.
- Where testing was carried out and in all cases of evaluation, there needs to be more detail. In particular with evaluation, candidates should include suggestions for improving the finished product.

SEC DESIGN & TECHNOLOGY
MAY 2013 SESSION
EXAMINERS' REPORT

Paper 2A and 2B

The written paper covered the Design and the four areas of study; Resistant Materials, Electronics, Food and Textiles, each section carried twenty marks. The Design section was common in both Paper A and Paper B.

The results obtained in the written paper showed that 50% achieved a grade 1 – 5 in Paper A and 77% achieved grade 4 - 7 in Paper B.

Analysing the results from both papers it is observed that:

In Paper A 0 candidates scored less than 4 for Design Process
43 candidates scored less than 4 for Resistant Materials
16 candidates scored less than 4 for Electronics
12 candidates scored less than 4 for Food
16 candidates scored less than 4 for Textiles

In Paper A 88 candidates scored more than 11 for Design Process
9 candidates scored more than 11 for Resistant Materials
45 candidates scored more than 11 for Electronics
39 candidates scored more than 11 for Food
40 candidates scored more than 11 for Textiles.

In Paper A two (2) candidates were consistently awarded more than 11 marks. Eighteen (18) candidates were consistently awarded 9 or more marks. In twenty six (26) cases zero (0) marks were awarded for individual questions.

In Paper B 23 candidates scored less than 4 for Design Process
54 candidates scored less than 4 for Resistant Materials
45 candidates scored less than 4 for Electronics
36 candidates scored less than 4 for Food
29 candidates scored less than 4 for Textiles

In Paper B 25 candidates scored more than 11 for Design Process
0 candidates scored more than 11 for Resistant Materials
24 candidates scored more than 11 for Electronics
22 candidates scored more than 11 for Food
8 candidates scored more than 11 for Textiles.

SEC DESIGN & TECHNOLOGY
MAY 2013 SESSION
EXAMINERS' REPORT

In Paper B zero (0) candidates were consistently awarded more than 11 marks. Eight (8) candidates were consistently awarded 9 or more marks. In fifty five (55) cases zero (0) marks were awarded for individual questions and of these twenty three (23) candidates scored zero (0) in more than one question.

Paper 2A and B (written)

The written paper covered the Design and the four areas of study; Resistant Materials, Electronics, Food and Textiles, each section carried twenty marks. The Design section was common in both Paper A and Paper B.

The results obtained in the written paper showed that 50.1% got the required marks in Paper A and 77.6% in Paper B. In Paper A 55.9% failed to gain the marks required for a Grade 5 or above. In Paper B 16.1% failed to gain the marks required for a Grade 7 or above.

An indication of where marks were not achieved by candidates is given in the following table.

Table 2. Number of candidates scoring less than 3.5 marks for each question.

Paper A	Question	Candidates scoring less than 3.5 marks
	1. Design	8
	2. Design	9
	3. Resistant Materials	103
	4. Resistant Materials	84
	5. Electronics	50
	6. Electronics	50
	7. Food	45
	8. Food	38
	9. Textiles	37
	10. Textiles	44
Paper B	1. Design	65
	2. Design	51
	3. Resistant Materials	111
	4. Resistant Materials	85
	5. Electronics	70
	6. Electronics	87
	7. Food	81
	8. Food	76
	9. Textiles	27
	10. Textiles	120

Paper II Design Process: Examiners report

Question 1(a): A good number of candidates have written a good brief but most failed to identify the area they intend to focus their design on.

Question 1(b): A large number of candidates answered correctly by suggested the use of questionnaires to get information from teenagers, but a large number of candidates have listed only sources, such as books and Internet.

Question 1(c): Most candidates listed size and cost but a number of specifications relating to the brief were missing.

SEC DESIGN & TECHNOLOGY
MAY 2013 SESSION
EXAMINERS' REPORT

Question 2(a): Most candidates sketched a number good ideas but a common mistake throughout the papers was that students failed to design gift very few used colours and the Christmas theme.

Question 2(b): When answering this question, most candidates listed areas to be tested but did not state what kind of test should be carried out. For example, candidates listed abrasion test but did not explain what the test consisted of.

Paper II A: Examiners report

Resistant Materials

Question 3(a): Many candidates gave only one correct property. Accepted answers included scratch and stain resistance and ease of cleaning.

Question 3(b): There were few acceptable responses for the first part of this question. Some of the candidates failed to give the full name of the tool. On the other hand, the majority of responses were satisfactory for the second part of this question. The commonest suggestion was to increase/decrease the tension by which the wires are held.

Question 3(c): Many of the definitions written were invalid because they were vague. However, a lot of the examples given were correct.

Question 3(d): Numerous responses did not consider the vibrations that the structure undergoes, hence opting for other joining methods rather than screwing. Sketches were quite clear since several candidates adapted their drawings from the figure given in the question.

Question 3(e): No candidate was awarded full marks for this question. Several candidates confused lamination with varnishing, and laminated hardwood with manufactured board covered by a plastic laminate. Various sketches lacked of detail or used inadequate terminology.

Question 4(a): Only a couple of candidates were awarded zero marks for this question. Almost everyone figure out the input and the hammer striking mechanism, but many ignored the movement of the damper. Others thought that the hammer strikes the fixed slider which in turn makes the damper vibrate. Both written and graphical entries were accepted.

Question 4(b): This question had mixed response. Some showed correct arrows on the diagrams but then confused the names of the types of motion.

Question 4(c): The majority of candidates suitably described the function of the fixed slider, but less understood the function of the damper. There is a discrepancy between the answers given for this question, and the understanding of the mechanism demonstrated in question 4(a) as regards the fixed slider. This might show a shortage in the application of knowledge.

Question 4(d): Some candidates did not understand this question but few left it blank. Amongst the accepted answers were the use of cams and connecting rods on wheels. One candidate suggested the use of crank shafts and connecting rods. None were awarded full marks due to lack of labelling in the sketches.

SEC DESIGN & TECHNOLOGY
MAY 2013 SESSION
EXAMINERS' REPORT

Electronics

Question 5(a): The first question was answered correctly by most of the candidates but few knew that the function of the monostable is to emit a single pulse or time delay.

Question 5(b): This question was quite straightforward as they had to name and draw the symbol of a sound device.

Question 5(c): Most of the candidates answered this question correctly, however some answered that a resistor reduces voltage instead of current.

Question 5(d): The first part of the question consisted of using Ohm's Law equation, however a good number of candidates either forgot to first subtract the LED's voltage from the supply voltage ($9V - 2V = 7V$) before working out the equation, or forgot to convert 20mA into 0.02A, hence obtaining the wrong answer. The second and third parts of the question were answered correctly by the majority of the candidates.

Question 6(a): The first part of the question consisted of filling in the blanks with technical terms. An average number of candidates answered correctly to the first two missing words, however the remaining two were either left unanswered or answered wrong. The second part of the question was answered correctly by the majority of the candidates but hardly any mentioned that technically the copper on the Veroboard oxidizes hence the need of cleaning before soldering.

Question 6(b): The first part of this question was straight forward and answered correctly by a good percentage of the candidates. However many either confused the piece of equipment with the component, hence answering transistor, or forgot to answer the part of the question which required to state its function. The second part of this question was a bit challenging and required to construct a given schematic circuit onto a breadboard. Marks were allotted according to the number of components that were connected in the right manner.

Question 6(c): This question was not difficult as candidates had to write down the correct name of logic gates. The majority gave correct answers.

Question 6(d): This question required calculating the total resistance of a number of series and parallel resistors. A large percentage gave the correct answers. The majority that gave an incorrect answer was mostly due to incorrect addition of fractions, hence resulting in a wrong answer.

Food

Question 7(a): Candidates were asked to list two dietary guidelines and give an example of each. Most students answered this question correctly; some of the students were awarded part of the marks because they failed to give examples.

Question 7(b) i: Candidates were asked for the functions of protein, most answered this question correctly.

Question 7(b) ii: Most candidates gave only one source of alternative protein; a few candidates gave two sources of alternative protein and were awarded full marks.

Question 7(b) iii: In this question candidates were asked to suggest one advantage of alternative protein, the majority of the answers given were correct.

Question 7(b) iv: Only a few candidates knew of a deficiency caused by lack of proteins most answers were incorrect.

SEC DESIGN & TECHNOLOGY
MAY 2013 SESSION
EXAMINERS' REPORT

Question 7(c): Most candidates who answered this question but only partial marks were awarded. Candidates had to suggest healthy fillings for stuffed eggs but instead suggested foods that complement the stuffed eggs in the plate instead.

Question 7(d): Most cooking methods suggested were correct. Some of the candidates gave a reason why such cooking methods were being better rather than the description of the cooking method that they were asked for. Question 8: This question was answered by most of the candidates. Less than 40% of the candidates were awarded half the marks or more for their answers. Only one candidate completely left out this question.

Question 8(a): The majority of the answers given to this question were correct and candidates were gained marks.

Question 8(b): Candidates were asked for the type of production to be used for finger food, most answers were correct but they failed to explain properly why such productions was being suggested and gained only half marks.

Question 8(c): Very few candidates answered this question correctly, most of those who attempted this question gave the function of yeast.

Question 8(d): Only a few candidates know how water at different temperatures affects yeasts. Most answers were incorrect.

Question 8(e): Candidates were asked for the function of three different ingredients. Most answers given for at least two of the ingredients were correct.

Question 8(e) iii: Candidates had to complete the given sentence which had three blank spaces. Most of the answers were correct and some gained partial marks.

Textiles

Question 9(a): The majority named the fabric correctly but they did not manage to give an example of a product that could be produced from the mentioned fabric.

Question 9(b): There was a variety of response for this question, but few candidates manage to give the right answer.

Question 9(c): The majority of the candidates mentioned the right material and a good reason.

Question 9(d): This question was aimed to ask the candidates about the process of tritk. Most of the candidates left the question blank. Third of the candidates tried to explain the tie and die process instead

Question 10(a): A question that should have helped students gain some marks proved to be disappointing. This was about identifying the the picture of an overlock machine. It was amazing of how little knowledge do students have about the mentioned machine.

Question 10(b): Many entries were correct. The commonest entry referred to the Hem. Binding and Overlock were rarely mentioned.

Question 10(c): There was a variety of response for this question, and most of these response were good answers.

SEC DESIGN & TECHNOLOGY
MAY 2013 SESSION
EXAMINERS' REPORT

Question 10(d): The question was aimed to mention the care label that is on every textile item to guide the user how to take care of the product. Only one candidate manage to give the right answer.

Question 10(e): Many entries where correct. Many candidates to give the correct symbols, and the correct material according to Question 9 (C)

Paper B: Examiners report

Resistant Materials

Question 3(a): The majority of candidates did not understand this question well since they stated the type of plastic rather than its property.

Question 3(b): Quite a number of entries were correct for the first part of the question; the most frequent choice being the Vernier callipers. The second part was not comprehended by some and the commonest acceptable answer mentioned a variation in the tension of the wires.

Question 3(c): Some candidates mixed up softwood with manufactured board and plywood with MDF or chipboard. There was no fully accurate definition for the term 'softwood'. A lot of the sketches produced did not have adequate labelling.

Question 3(d): Many did not attempt this question or answered it incorrectly.

Question 3(e): Only a couple of responses were correct on both entries. Candidates found the last word less difficult to deduce.

Question 4(a): Almost all candidates were awarded marks for this question. The input was the easiest part to identify but the majority did not classify the damper movement as part of the output. Over one fourth of the entries were awarded full marks.

Question 4(b): Numerous candidates did not understand the given instructions and showed only the direction of movement when the key is pressed.

Question 4(c): There were few acceptable explanations of the function of the fixed slider, and much less for the function of the damper. Candidates might be more familiar with the function of the fixed slider since it forms part of the cam-and-follower mechanism.

Question 4(d): The bulk of the entries were left blank. Candidates lost marks because sketches were again left unlabelled. It is advisable that no diagram is ever left without suitable annotations because such notes aid in the understanding of the sketch. There were a couple of entries that showed video cameras instead of mechanical cams.

Electronics

Question 5(a): The first part of the question was answered correctly by an average number of candidates. Some gave examples of were to use the circuit instead of naming the modes required. The second and third part of the questions were answered correctly by the majority of the candidates.

Question 5(b): This question was quite straightforward as they had to draw the symbol of a buzzer. Some confused the symbol with that of a bell which is similar.

Question 5(c): Most of the candidates answered this question correctly, however some answered that a resistor reduces voltage instead of current.

Question 5(d): The first part of the question consisted of using a given fomula to calculate the correct answer. A number of candidates forgot to convert 20mA into 0.02A,hence obtaining the wrong answer. The second part of the question was answered correctly by a large percentage of the candidates. SPST,SPDT or similar were not acceptable as answers as they are types of switches and a name of switch was required. Push to Make/break switches were also not acceptable as these switches do not latch. The third part of the question was answered correctly by the majority of the candidates. It was noted that chipboard was a common wrong answer given. Many probably were referring to a PCB which ICs (commonly known as 'chips') are soldered to. However chipboard is actually a type of manufactured wood.

Question 6(a): The first part of the question was answered correctly by the majority of the candidates but hardly any mentioned that technically the copper on the Veroboard oxidizes hence the need of cleaning before soldering. The second part of the question was rather straightforward consisting of images of four tools and candidates were required to fill in their names. The majority gave the right answers with some candidates giving only part and not the full name of a tool.

Question 6(b): The first part of this question was straightforward and answered correctly by a good percentage of the candidates. However some candidates referred to the previous question's table instead of Fig. 4, hence giving the wrong answer. The second part of this question was a bit challenging and required to construct a given schematic circuit onto a breadboard. Marks were allotted according to the number of components that were connected in the right manner.

Question 6(c): This question was not difficult as candidates had to write down the correct resistor colour bands to the given values. The majority gave correct answers.

Question 6(d): This question required calculating the total resistance of two resistors connected in parallel. A large percentage gave correct answers. The majority that gave an incorrect answer was mostly due to either incorrect addition of fractions, hence resulting in a wrong answer, or simply added the resistor values which would have been correct only if the resistors were connected in series and not in this case.

Food

Question 7(a): This question was about the four dietary guidelines. Although it was a straightforward question a good number of candidates did not answer this question correctly.

Question 7(b): Candidates were asked for the functions, sources and deficiencies of protein, most of those who answered this question where awarded partial marks. A few did not attempt the whole question.

SEC DESIGN & TECHNOLOGY
MAY 2013 SESSION
EXAMINERS' REPORT

Question 7(c): Candidates had to suggest healthy fillings for stuffed eggs. Most answered this question but not all answers were clearly explained. Candidates were confused and suggested other food that will complement the stuffed eggs in the plate instead.

Question 7(d): In this question candidates were asked to suggest one healthy cooking method for the given food. Some answered this question correctly but there were others who gave healthy cooking methods which are not suitable for the type of food given. Those who suggested methods that are not healthy such as deep frying were not awarded any marks

Question 8(a): Only a few candidates answered this question correctly, most of those who attempted this question gave the function of yeast.

Question 8(b): Most candidates who answered this question were awarded partial marks.

Question 8(c): This question was about the functions of ingredients in a yeast product; most answered part of this question correctly.

Question 8(d): Candidates were asked to name two products that are produced by a fermentation process; candidates who tackled this question and managed to gain marks.

Question 8(e) i: Candidates were asked for the colour code of the chopping boards used for two types of food. There were quite a few who did not know the colour code used for bread. Some answered both correctly, others were awarded half marks.

Question 8(e) ii: This question was about the reason why these different chopping boards are used. Some tried to answer this question could not express themselves properly therefore they did not give a clear reason.

Textiles

Question 9(a): This question was answered by almost all the candidates. Almost all the candidates answered correct.

Question 9(b)i: Candidates were allotted marks for their answers, but most did not know that linen is a natural fabric.

Question 9(b)ii: Most candidates either answered this question wrong or did not answered the question.

Question 9(b)iii: All the Candidates answered this question wrong.

Question 9(b)iv: Most of the Candidates did not answered this question.

Question 10(a),ii,iii: Very easy questions, a very high percentage answered these questions correctly.

Question 10(b): The question was aimed to mention the procedure how to test materials. Only few candidate manage to give the right answer.

Question 10(c): This question was aimed to draw a care label from given information. Most of the candidates answered this question correctly.

Chairperson

SEC DESIGN & TECHNOLOGY
MAY 2013 SESSION
EXAMINERS' REPORT

2013 Examiners' Panel