

UNIVERSITY OF MALTA

**SECONDARY EDUCATION CERTIFICATE
SEC**

**DESIGN AND TECHNOLOGY
May 2012**

EXAMINERS' REPORT

**MATRICULATION AND SECONDARY EDUCATION
CERTIFICATE EXAMINATIONS BOARD**

General Information

During this session, a total of 309 candidates registered to sit for the examination; 139 candidates opted for Paper 2A and 170 chose to sit for Paper 2B. Of these 11 candidate was absent for Paper 2B. There was a significant increase in the numbers who entered the examination on the total for the previous year, the increase being 90 candidates.

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.

Table 1: Candidates' grades in SEC Design & Technology May 2012

Grade	1	2	3	4	5	6	7	U	Absent	Total
No. of Candidates										
Option A	5	14	21	16	4	-	-	79	0	139
Option B	-	-	-	20	33	55	32	19	11	170
Total %	1.6	4.5	6.5	11.6	12.0	17.8	10.4	32.0	3.6	100 %

General comments on the extended project.

The work of 152 candidates from 11 schools was moderated. The general comments are based on the moderated work.

- Some of the artefacts presented were original in concept but others lacked creativity and skills in making
- More care must be taken to ensure aspects such as the Design Brief are the student's individual work or greater care should be used to show brainstorming and consensus work.
- While it was generally thought that research was satisfactory or good, there were instances where the internet had been used to download excessive material that could barely be related to the assigned brief. Questionnaires carried out as part of research should be left in the folios.
- When solving an electronics situation, research on components used and schematic diagrams of circuits should be included.
- In some folios the chosen idea was not presented clearly as there was no evidence that it was chosen against specifications.
- The use of models to develop ideas was seen in a number of cases and this should be regarded as good practice.
- While most graphical techniques were classified as satisfactory or good, there were instances where candidates displayed poor skills in this area. An absence of annotation and colour was also noted in some work.
- The aspect of Specifications was well handled in the majority of cases although there was enough evidence to suggest that more attention should be given to this aspect.
- Work plans were generally satisfactory although some gave evidence of the need for more effort.

- The aspects of testing products showed, through the work of a number of candidates, evidence to suggest only minor points were examined. In some cases it showed that there was no consideration of the end user. Minor testing led to only a few modifications being proposed.
- The folios were generally organised in a satisfactory or good way. They demonstrated the use of ICT although it was noted that some did not use spell checks prior to printing.
- Photographs of the steps of the making should be included in all the Food Technology folios. This evidence was lacking in some folios.

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 42% got the required marks in Paper A and 82% in Paper B. These results represent a 1% increase on those of the previous year for Paper B while Paper A remains static.

Analysing the results from both papers it is observed that:

In Paper A 0 candidates scored less than 4 for Design Process

21 candidates scored less than 4 for Resistant Materials

12 candidates scored less than 4 for Electronics

0 candidates scored less than 4 for Food

53 candidates scored less than 4 for Textiles

In Paper A 62 candidates scored more than 11 for Design Process

9 candidates scored more than 11 for Resistant Materials

29 candidates scored more than 11 for Electronics

38 candidates scored more than 11 for Food

4 candidates scored more than 11 for Textiles.

In Paper A zero (0) candidates were consistently awarded more than 11 marks. Three (3) candidates were consistently awarded 9 or more marks.

In Paper B 27 candidates scored less than 4 for Design Process

26 candidates scored less than 4 for Resistant Materials

60 candidates scored less than 4 for Electronics

3 candidates scored less than 4 for Food

3 candidates scored less than 4 for Textiles

In Paper B 31 candidates scored more than 11 for Design Process

15 candidates scored more than 11 for Resistant Materials

18 candidates scored more than 11 for Electronics

105 candidates scored more than 11 for Food

65 candidates scored more than 11 for Textiles.

In Paper B one (1) candidate was consistently awarded more than 11 marks. Nine (9) candidates were consistently awarded 9 or more marks.

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 42.5% got the required marks in Paper A and 82.4% in Paper B. In Paper A 57.5% failed to gain the marks required for a Grade 5 or above. In Paper B 11.2% 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.

	Question	Candidates scoring less than 3.5 marks
Paper A	1. Design	15
	2. Design	14
	3. Resistant Materials	68
	4. Resistant Materials	67
	5. Electronics	40
	6. Electronics	53
	7. Food	6
	8. Food	62
	9. Textiles	120
	10. Textiles	63
Paper B	1. Design	52
	2. Design	75
	3. Resistant Materials	73
	4. Resistant Materials	103
	5. Electronics	90
	6. Electronics	104
	7. Food	8

	8. Food	12
	9. Textiles	9
	10. Textiles	65

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.

Question 1(b): Most candidates answered correctly by listing the children as an important aspect of design, but a large number of candidates have listed sources, such as books and Internet instead of areas.

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

Question 2(a): Candidates sketched good ideas but very few used colours.

Question 2(b): A large number of candidates sitting for paper B did not attempt this question, whilst candidates sitting for paper A failed to refer to the specifications listed in question 1.

Paper II A: Examiners report

Resistant Materials

Question 3(a): There were many correct entries for this question. One third of the candidates gave a partial response so they were awarded half a mark.

Question 3(b): The majority of candidates obtained half the allocated marks. 30% obtained full marks, while one fifth of the entries were erroneous. Many described the electric-arc welding process as dangerous but very few mentioned the specific hazards.

Question 3(c): Only one candidate stated both properties. 30% stated one property, mostly electrical conductivity. There were many candidates who did not understand the question.

Question 3(d): For the first part of this question, there were only a couple of accurate answers. Many mentioned metals which are less suitable for the electrode grips. There were many correct entries for the second part of the question. However some candidates still confused thermosetting plastics with thermoplastics. Only two candidates gave full correct answer to the last part of this question. Some described the term alloy steel but not tempering. The majority did not know the meaning of “tempered alloy steel”.

Question 3(e): Over half of the entries were correct. However, some diagrams were unclear or lacked labelling. The commonest response was pop rivets. Some students mistakenly suggested the use of screws.

Question 4(a): One fourth of candidates realized that the system made use of two first class levers. Some did not understand the question.

Question 4(b): A lot of marks were lost due to lack of labelling.

Question 4(c): Many candidates did not know what a pneumatic system is or confused it with a hydraulic system.

Question 4(d): Almost all answers were acceptable. Amongst the commonest answers were those of extending the length of both levers or repeating the set of linkages on top of the other.

Question 4(e): Responses for this question varied, the majority of them being awarded partial marks. The most popular response was that of using thicker levers.

Question 4(f): Many candidates left this question unattempted. The few accepted designs made use of two cylinders: one attached to each lever.

Electronics

Question 5(a): The first question was answered correctly by most of the students but few were aware that the potentiometer is there to calibrate the sensitivity.

Question 5(b): This question was quite straightforward as they had to identify a common electronic component.

Question 5(c): Most of the students answered this question correctly.

Question 5(d): The Darlington pair is common to students hence this question was not difficult.

Question 5(e): This question was considered a bit challenging. It consisted of 3 marks so it needed a bit of thinking. A low percentage did this question right. Some of the students worked the mathematical formula good but they answered wrong. They were not sure of how much voltage is needed to bias the transistors.

Question 5(f): This question consisted of using Ohm's Law equation, however there was a number of students that did it wrong.

Question 6(a): A reasonably easy question where a very high percentage answered this question correctly.

Question 6(b): This question was a very challenging one for the students as only a few answered it correctly. This question had multiple answers but many students left it unanswered or answered it wrong.

Question 6(c): This question was not difficult as students had to connect a bulb and a buzzer to a relay switch which was given. Some students did not know the symbols of the bulb and buzzer which resulted into a wrong answer.

Question 6(d): The logic gates and truth tables were answered correctly by most of the students, though the last part a large number answered it wrong.

Food

Question 7: This question was answered by almost all candidates. About 86% of the candidates were allotted more than half the marks for this question. Only one candidate completely left out this question.

Question 7(a): Candidates were allotted marks for their answers, but most didn't know that the first symbol was that of the microwave.

Question 7(b): The majority of the candidates answered this question correctly though they were not given the full marks when their answer was directed to the premises rather than to the food itself.

Question 7(c): In this question the candidates were asked what is the use of the food probe in cooking and reheating food. Only a few answered this question correctly.

Question 7(d): A good number of candidates gave valid answers to this question although those who repeated the same answer for different food were only allotted the one mark.

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): Only a few were given full marks, most of the candidates who answered this question either identified one material or gave an example only when they were asked for both.

Question 8(b): Similar answers such as 'for healthy reasons' or 'diet' were given as to why different types of bread were accepted. Candidates should be trained to give more specific answers such as for their nutritional content, because of change in consumers' demands or multicultural societies.

Question 8(c): Most of the candidates were awarded half the marks to this question as part of the answer given was in the question itself.

Question 8(d): Sensory Analysis is dealt with in practical sessions during research when analysing products, in development and also in testing. Therefore this is a very valid question in food technology but surprisingly only a few candidates answered correctly and was rewarded marks.

Question 8(e): This question was answered by the majority of the candidates although some got mixed up and suggested reducing sugar instead of salt.

Textiles

Question 9(a): This question deals with naming of shaping methods and suggesting suitable textile item. The majority of students showed that they have no knowledge of what shaping method is all about.

Question 9(b):

(i) This question refers to the use of ticketing in mass production method. Very few answered correctly.

(ii) This part was about mentioning ONE stage in production where accuracy is essential. Here again most answers were irrelevant.

(iii) Here had to mention ONE other factor to be considered in the mass production. A variety of answers were given, but very few were correct.

Question 9(c): This part of question was about giving examples fabrics which require one-way laying, like velvet and one-way prints. None of students gave a good answer.

Question 10(a): This question required students to complete THREE fill-in-type sentences with the correct word. About 33% attempted to give an acceptable answer, though no one got all three sentences right.

Question 10(b): This question was about control and standards to be met in producing high quality textile products. All answers produced were either irrelevant or of a guess-type variety.

Question 10(c): A question that should have helped students gain some marks proved to be disappointing. This was about listing the instruction for FOUR washing symbols given. It was amazing of how little knowledge do students have regarding washings symbols commonly found on most textiles items.

Paper B: Examiners report

Resistant Materials

Question 3(a): Many entries were correct. The commonest entry referred to the use of welding mask.

Question 3(b): There was a variety of response for this question, but few candidates obtained full marks since several responses were too generic.

Question 3(c): The majority explained the meaning of only one of the properties, thus losing half of the allotted marks. Few did not comprehend the question.

Question 3(d): Over half of the candidates circled the electrode grips, thus gaining full marks for the first part of this question. For part ii), none mentioned brass or bronze as a suitable material for the same grips. However, half the marks were awarded for other less suitable metals. In the last part of this question, over 50% of entries were correct. Explanations which mentioned only electrical or heat insulation were not accepted since other materials have these properties.

Question 3(e): There were very few acceptable answers for this question. Some candidates mistakenly suggested electric-arc welding.

Question 4(a): Labelling was correct in the majority of the response, especially for the pivot. Still, some did not include the direction of the forces acting at the load and effort.

Question 4(b): Some candidates drew an example of a first class lever instead of a second class lever. Those who answered correctly opted for wheelbarrows and nutcrackers.

Question 4(c): There were many blank entries for this question and very few obtained any marks. Similar to Paper IIA, some candidates confused pneumatic with hydraulic systems.

Question 4(d): In the first part of this question, the vast majority showed the input arrows appropriately. Numerous candidates did not understand or did not attempt the second part of the question. There were very few acceptable designs. One particular design showed a single cylinder with central inlet and two pistons rod connecting both levers in the middle of the case.

Electronics

Question 5(a): This question was answered correctly by most of the students. It was a basic question to draw simple symbols of common switches.

Question 5(b): Some of the students had a problem with this question as they did not answer it correctly. They had to subtract the voltage supply from the voltage on the LED in order to find the voltage on the resistor.

Question 5(c): This question consisted in calculating the total resistance. Hence a high percent of students failed in answering it properly.

Question 5(d):

i. Only a very few answered this question in the correct order. Many students did not change the micro farads (μF) in Farads and therefore resulting in a wrong answer. However most of the students used the Formula $T=RC$ to work out the answer.

ii. This question was answered correctly by most of the students. It was quite straight forward.

iii. A very easy and simple question but yet many students answered it wrong. It was clear that students did not understand the meaning of 47K where the K means thousand.

Question 6(a):

i. A reasonably easy question where a very high percentage answered this question correctly.

ii. This question consisted in describing the term Monostable and only few students answered it correctly. Monostable is a term that is mainly used in 555 timers.

iii. This question was a very challenging one for the students as only a few answered it correctly. This question had multiple answers but many students left it unanswered or answered it wrong.

Question 6(b):

i. This question was answered correctly by most of the students.

ii. Many students answered this question wrong. Students had to answer this question by swapping R1 with R2.

iii. Many students knew that R3 is to limit the current flow in the base of the transistor.

Question 6(c): Students seemed to know about logic gates as they completed the question correctly.

Food

Question 7: This question was answered by almost all candidates. About 80% of the candidates were allotted more than half the marks for this question.

Question 7(a): Most candidates were allotted marks for their answers, but marks were not awarded to those who wrote healthy as a reason as healthy lunches were mentioned in the question.

Question 7(b): The majority of the candidates answered this question. Although most of the answers were correct they were given half the marks as their answer was more general than associated with safety in the food lab.

Question 7(c): In this question the candidates were asked to give two advantages of material used in food packaging. Although most of the answers were correct marks were not awarded if the same reason was given for different materials.

Question 8: This question was answered by most of the candidates. About 75% of the candidates were awarded half the marks or more for their answers.

Question 8(a): Quite a number of candidates were awarded full marks for this exercise. A few candidates got this exercise completely incorrect showing that they find difficulty in understanding the language.

Question 8(b): This question required inserting the correct given word in the sentences and was answered correctly by most candidates.

Question 8(c): Candidates were required to identify the correct storage places for different food. Full marks were only awarded for the exact storage places, some obtained partial marks and a few showed difficulty in understanding the language.

Question 8(d): Most candidates were able to identify one investigation that they will carry out to develop the product.

Textiles

Question 9(a): This question was fill-in sentences by selecting the correct word from a given list. Good majority of students answered this question correctly.

Question 9(b): It was a multiple choice type of FOUR sub-questions. Most answered correctly, though some mistakes should have avoided.

Question 9(c): In this question students had to match from a given list TWO fabric properties for each of textile item mentioned. Most answers given were of an acceptable standard.

Question 9(d): Here students were asked to draw the care label symbol for dry cleaning and cool iron. Most students managed to answer correctly.

Question 10(a): in answering this question students needed an amount of thinking. It was about suggesting important factors to keep in mind in the manufacturing of checked linen textile item. It was obvious that most students did not show sufficient knowledge of linen properties and characteristics.

Question 10(b): This question consisted of labelling marked sections on a given sketch making their selection from a list of SIX short phrases. Some students managed to label some phrases correctly, while others seem to label such sections at random.

Chairperson

Examiners' Panel 2012