UNIVERSITY OF MALTA

THE MATRICULATION EXAMINATION

SEC LEVEL

DESIGN & TECHNOLOGY

MAY 2014

EXAMINERS' REPORT

MATRICULATION AND SECONDARY EDUCATION
CERTIFICATE EXAMINATIONS BOARD

SEC DESIGN AND TECHNOLOGY
MAY 2014 SESSION
EXAMINERS' REPORT

General Information

This year a total of 268 candidates registered to sit for the examination, 135 candidates opted for Paper 2A and 133 chose to sit for Paper 2B. 10 candidates were absent, 3 in Paper 2A and 7 in Paper 2B. A total of 25 candidates did not present the extended projects, 7 in Paper A and 18 in Paper B; of these 3 candidates who enrolled for Paper 2A and 7 who enrolled for Paper 2B neither presented the extended project nor sat for the written examination in Paper 2.

Table 1: Candidates' grades in SEC Design & Technology May 2014

GRADE	1	2	3	4	5	6	7	U	ABS	TOTAL
PAPER A	5	14	21	26	4	-	-	62	3	135
PAPER B	-	-	-	18	51	34	10	13	7	133
TOTAL	5	14	21	44	55	34	10	75	10	268
% OF TOTAL	1.9	5.2	7.8	16.4	20.5	12.7	3.7	28.0	3.7	100

Paper 1 was the Extended Project which was common to all candidates. Candidates' performance was very good. They presented an artefact together with its related design folio.

Table 2 shows the performance in Paper 1 Extended Project
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Table 2							
EXTENDED PROJECT Distribution of marks (Max. 50)	**0 - 10**	**11 - 20**	**21 - 30**	**31 - 40**	**41 - 50**	**Projects not presented**	**Total**
No. of candidates who opted for paper 2A	1	3	15	42	67	7	135
No. of candidates who opted for paper 2B	1	2	12	56	44	18	133
Total	2	5	27	98	111	25	268
% of total	0.7	1.9	10.1	36.6	41.4	9.3	100

Table 3 shows the choice by area of study of the Extended Projects submitted for Paper 1. Candidates' choice fell mainly on three areas of study like the previous years.

Table 3						
No. of projects submitted in:	**Resistant Materials**	**Electron.ics**	**Food**	**Textiles**	**Projects not presented**	**TOTAL**
	63	79	87	14	25	268
% of Total:	23.5	29.5	32.5	5.2	9.3	100

General comments on the extended project

A maximum of 50 marks were allotted for the Extended Project which was common for all candidates opting for Paper A and Paper B. 21 extended projects were moderated according to the set criteria.
Teachers and candidates should be aware that the Design Folio should be approximately 15, A3 sheets and the time allotted for the project is about 40 hours. All projects are to be assessed on the Assessment Criteria which can be downloaded from the following site: http://www.um.edu.mt/__data/assets/pdf_file/0006/183759/Assessment_Criteria_Form.pdf
Some design folios had excellent presentation. Research was relevant; derived from various sources.
Some candidates lacked creativity in their design and presented ideas very similar to existing products.
A copy of questionnaires used to gather information was not presented in the some folio together with its analysis.
Not all candidates presented photos of the making of the artefact. Photographic evidence of the making is essential in all folios. This is a necessity especially in Food folios as no product is presented during moderation and interviews.
Testing for food was very good while other areas lacked detailed proof of testing.
Evaluation remains an area which needs to be improved.

6 candidates were interviewed about the project they presented. There were 3 Electronics projects and 3 Resistant Materials. The folios and artefacts presented in the Electronic projects were of a very high standard. When interviewed all 6 candidates knew the area they worked in very well. They could explain how they chose their ideas, the work that was involved to carry it out as well as make suggestions for modifications about their work.

232 candidates gained over 50% of the marks while 11 failed to obtain a pass mark. Some teachers were very generous with the marks given. In fact the average mark of the presented projects was 74%.

Paper II A: Examiners report

Design Process

Question 1(a) In the first question the candidates were given four situations, they had to choose one and write a Design Brief. A good number of candidates identified the problem that they chose but failed to include a marketable aspect in the Brief.

Question 1(b) The majority of candidates were able to analyse the Design Brief and identify two keywords.

Question 1(c) Almost all candidates mentioned two different sources from where research can be collected with most of them identifying internet as one of the source.

Question 1(d) There were good comprehensive answers to this question as candidates could explain the research they needed to carry out according to their Design Brief.

Question 1(e) Part (i) and (ii) of this question which were about the function and the material used for the product, most candidates answered correctly. However they misunderstood what was asked from them regarding the type of production to be used when manufacturing the product and the impact that their product will have on the environment. Candidates were expected to name either mass or batch production for part (iii), and list how their product took into consideration environmental issues for part (iv).

Question 1(f) Most candidates answered correctly but a few failed to recognise that the specification list is used as a guide for their design.

Question 2(a) Candidates were asked to sketch some ideas, most candidates made very good use of colour and annotations.

Question 2(b) In this question the majority of candidates listed a number of aspects against which they would choose their design, but failed to point out the list of specifications as their guide.

Resistant materials

Question 3(a): There were very few correct entries for this question. Many stated that the process shown in Figure A was injection moulding or press moulding, most probably because they did not consider the information given in the introductory sentence.

Question 3(b): Only two candidates obtained full marks in this question, although many of the others deduced the second word. The object which was mostly mentioned as an example was the drain pipe.

Question 3(c): The majority of candidates were awarded marks for this question, especially in second part. Some referred to chemical structure to sustain their explanation of the latter statement. Only a few gave correct explanations for the first statement, showing that the property of malleability was unknown to many candidates.

Question 3(d): There were many correct sketches showing standard forms in 3D. However, nomenclature was often inexact.

Question 3(e): Many candidates confused the type of motion with pressure. Amongst the most suggested mechanical systems were those powered by hydraulics or pneumatics. Sketches were quite clear and communicative.

Question 4(a): Numerous candidates were awarded marks, but even though there were a multitude of acceptable answers to parts of this question, only one candidate obtained the full marks. Some responses to the type of material to use were generic and referred to a category of material: few specified the exact name of the material. Moreover, a lot of the descriptions of how to apply a particular surface finish were too brief and superficial.

Question 4(b): Certain candidates did not understand the instructions given and drew methods of assembling the axles with the body of the wagon. There were a couple of responses which made use of sentences instead of drawings. These could be not considered as acceptable answers.

Question 4(c): Very few candidates were not awarded marks for this question. The vast majority showed the correct direction of movement of the output, but the input motion was found to be more difficult to identify. Many gave a suitable reason why the driver wagon was designed with two axles instead of one.

Question 4(d): Some candidates realized that the wagon will move up-and-down but not oscillate from left-to-right. Half mark was awarded in such cases. There were many correct suggestions for the second part of the question. One in particular suggested elongating the axle. A couple of entries confused the eccentric wheels with eccentric cams.

Electronics

Question 5(a) The first part of the question was about logic gates where students had to name the logic gate used in the circuit, name its connections and write down its truth table. An average number of candidates answered correctly. In the second part candidates had to label the positive and negative terminals of an LED and state its purpose within the give circuit. The majority of candidates answered correctly to the LEDs use but many did not know the names of the terminals.

Question 5(b) Most of the answers were correct; candidates knew that the LDR should be replaced by a thermistor and they also knew the symbol of this component.

Question 5(c) Some candidates answered this question by drawing the component to be replaced rather them mentioning its name.

Question 5(d) This question required candidates to redesign the output part of the circuit by using a Darlington pair. Only a few candidates redesigned the circuit totally correct. A good percentage managed to draw a Darlington pair and/or add output but many forgot to add a resistor from the emitter to the negative terminal of the circuit.

Question 6(a) The first part of the question consisted of filling in the blanks with the full name for AC and DC as well as source supply examples. The majority answered correctly to the names while some, instead of naming the sources such as battery or mains supply gave an electronic appliance such as laptop for an example. The second part was answered correctly by the majority of the candidates where they had to draw the waveform for AC supply.

Question 6(b) A large number of candidates answered correctly with the name relay for the component as well as its main use. A small percentage confused the relay with either a bell or a solenoid.

Question 6(c) The first part of the question was not difficult as candidates had to identify the pin numbers on a 555 timer IC. In second part they had to state the terms IC and DIL and a good majority of the candidates did not know that DIC stands for Dual in Line.

Question 6(d) This was a calculation using the formula P=IV. The majority gave the correct answers.

Question 6(e) The candidates had to calculate the total resistance of a number of series and parallel resistors. A good percentage gave the correct answers. The majority of those who had a wrong answer were due to the incorrect addition of fractions.

Question 6(f) Only a small percentage of the candidates got this question right. This shows that candidates are not aware of the resistors' values found on the market and that a higher value than 316Ω should be used.

Food

Question 7(a) In this question the candidates had to propose modification to the pasta recipe to improve the nutritional content, alter flavour and presentation. Candidates were allotted marks for the first two parts of this answer however they failed to suggest different presentation of the product.

Question 7(b) Most of the answers were correct with the majority recommending wholemeal pasta.

Question 7(c) The slimming diet was most mentioned by the candidates as it contains less fat.

Question 7(d) The candidates had to match the nutrient with its function and most candidates answered this question correctly.

Question 8(a) Most candidates could not define what food spoilage is. Some referred to the expire date of the product.

Question 8(b) Candidates mentioned hygiene steps that should be taken during food handling instead of explaining what causes food spoilage.

Question 8(c) There were a few candidates who knew exactly what the acronym means. Most only knew what H and P stand for.

Question 8(d) Only a few candidates knew any steps of the HACCP system.

Question 8(e) Candidates did not know the food safety regulations and very few were allotted part of the marks.

Textiles

Question 9(a) In this question candidates had to name products that could be made from recycled textiles. Over 75% answered this question correctly.

Question 9(b) None of the candidates managed to fully respond to this question correctly. Only a few were awarded part of the marks. Most candidates showed that they have no idea of what a seam is.

Question 9(c) Almost all candidates knew the different type of fasteners therefore their answers were correct.

Question 9(d) Only few students were allotted marks for this question. A technical particularity was required from the candidates and the majority either answered this question wrongly or did not answer the question at all.

Question 10(a) Candidates were asked for the meaning of symbols drawn on patterns or to draw these symbols. Only a few were awarded part of the marks for this question.

Question 10(b) In this question candidates were asked to name two tools used for marking out fabric. Some mentioned at least one tool.

Question 10(c) There were few acceptable sketches but only some of these included proper labelling. Candidates either did not understand the question or else had no idea how to draw a pattern.

Paper II B: Examiners report

Design Process
Question 1(a) In the first question the candidates were given four situations, they had to choose one and write a Design Brief. An average number of candidates identified the problem but failed to include a marketable aspect.

Question 1(b) A large number of candidates answered correctly by analysing the Brief and finding two keywords.

Question 1(c) Most candidates answered correctly and a big majority named Internet as one of the sources.
Question 1(d) A good number of candidates answered correctly but others misunderstood the question and listed a number of sources instead.

Question 1(e) When answering this question, most candidates answered correctly the first two parts but misunderstood what was asked form them regarding the type of production and environmental issues. Candidates were expected to name either mass or batch production for part (iii), and list how their product took into consideration environmental issues for part (iv).

Question 1(f) Very few candidates answered correctly and some left it blank.

Question 2(a) Most candidates failed to use colour in their sketches, but labelled the sketches appropriately.

Question 2(b) The majority of candidates chose their design based on their personal opinion and failed to compare their design to the list of specifications.

Resistant materials
Question 3(a): Almost all candidates obtained full marks in this question.

Question 3(b): Very few candidates defined the term "malleability" correctly. The term "thermoplastics" was found easier to define, even though some of the definitions were incomplete.

Question 3(c): There were mixed responses for this question. Marks were not awarded when the sketched sheet was ambiguous or resembled a flat bar. The use of proper terminology was lacking and half of the candidates did not state the correct forming method.

Question 3(d): Similarly to Question 3(e) of Paper IIA, many confused the type of motion with pressure and suggested using hydraulic or pneumatic systems to produce the input force for the extrusion process. Very few were awarded full marks.

Question 4(a): The vast majority mentioned a category of material, prominently wood: only a couple of entries were specific on the name of the material. There were many acceptable responses for the second part of the question. However, few considered safety aspects.

Question 4(b): Various candidates showed the direction of motion of both the input and output correctly. There were others who did not understand how the mechanism works. Even though many attempted the third part of the question, there were few which were awarded full marks. Some of the sketches lacked of clarity and annotations, whilst other did not follow the instructions given in the question. It is interesting to note that while the vast majority of candidates stated that a drilling machine is needed to cut holes, just a few mentioned the drilling bit. Moreover, there were others who indicated the use of a laser-cutting machine.

Question 4(c): Many candidates had difficulties in expressing themselves and describe the movement of the wagons. Marking was therefore lenient for the first part of the question. On the other hand, the second part of the question was found easier to answer. In fact, many realized that fixing the axle nearer to the centre of the wheel would reduce the oscillating effect on the wagons.

Electronics

Question 5(a) In this question the candidates had to name the logic gate used in the circuit, name its connections, write down its truth table and name the terminals of the LED. An average number of candidates answered this question correctly; a good number knew the purpose of each connection while only a few could name the LED terminals.

Question 5(b) A good percentage of candidates answered this question correctly.

Question 5(c) Marks were awarded to a large number of candidates as they knew that the change will control the sensitivity of the circuit.

Question 5(d) Candidates managed to identify the input and output components in the circuit but some were uncertain about the LDR.

Question 6(a) An average number of candidates answered this question correctly by giving an example of an AC and a DC source and drawing the wave form produced by an AC supply.

Question 6(b) A large number of candidates answered correctly with the name relay for the component given.

Question 6(c) Quite a number of candidates identified the pin numbers on the 555 timer IC and knew that IC stands for an integrated circuit.

Question 6(d) Most of the candidates were able to find out the current of the vacuum cleaner.

Question 6(e) In this question candidates had to calculate the total resistance of resistors in parallel. While part of the working was correct, marks were lost as most obtained a wrong answer when adding up fractions. In the second part of the question candidates selected the correct value of the resistor.

Food

Question 7(a) Candidates had to fill in the blanks with the appropriate nutrient; the majority answered this exercise correctly.

Question 7(b) In the first part of this question most candidates suggested wholemeal pasta as a healthier option while they lost marks in the rest of the question as only a small number knew what alternative protein is.

Question 7(c) Some candidates were awarded full marks for this question; others were allotted part of the marks as they inserted the words in the wrong column.

Question 8(a) The majority of candidates answered this question correctly.

Question 8(b) Many candidates did not read this question properly and instead gave the precautions one has to take when preparing food. They commented on a readymade sandwich.

Question 8(c) Only a few answered this question correctly.

Question 8(d) Most of the candidates did not know what the letters HACCP stand for.

Textiles

Question 9(a) Candidates had to name products that could be made from recycled textiles, a large percentage of candidates answered correctly. Answers were very similar or identical to each other.

Question 9(b) About 50% of the candidates responded to this question correctly and managed to obtain full marks.

Question 9(c) This question was about the different types of fasteners and 75% of the candidates were awarded full marks.

Question 9(d) This question required the candidates to label a drawing and give the name of the seam in the same drawing. None of the entries were correct. Answers varied a lot and only a few were close to the correct answer.

Question 9(e) Candidates had to match the pictures of showing different types of shaping with their appropriate names. Some wrongly labelled the pictures presented. In the second part of this question many did not know that the interfacing is used between the fabric and the lining.

Question 10(a) A few candidates obtained full marks for this question which was about the symbols used for pattern markings.

Question 10(b) Most of the candidates did not know the tools used for drawing patterns.

Question 10(c) Candidates had to sketch a pattern for one of the bags, many did not attempt this question and others answered it incorrectly.

Chairperson,
Examiners' Panel
2014