UNIVERSITY OF MALTA

THE MATRICULATION CERTIFICATE EXAMINATION
ADVANCED LEVEL

COMPUTING

May 2008

EXAMINERS' REPORT

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD

AM Computing
MAY 2008 SESSION
EXAMINERS' REPORT

Part 1: Statistical Information

Table 1: Distribution of grades awarded in May 2008

GRADE	A	B	C	D	E	F	Abs	Total
Number	10	39	64	33	26	43	10	225
% of Total	4.44	17.33	28.44	14.67	11.56	19.11	4.44	100

Part 2: Comments regarding candidates' performance

Comments regarding Paper 1

Question 1

(a) While a considerable number of candidates knew the generic task of the "I/O subsystem", very few provided convincing answers to "I/O addressing"
(b) A number of candidates failed to provide a correct response to what "isolated I/O" is.

Question 2

(a) Most candidates forgot that the smallest 2's complement number in the register is a negative number and thus gave "0000 0000 0000 0000" as answer.
(b) and (c) were generally correctly answered.

Question 3

(a) In general candidates knew the difference between "modulation" and "multiplexing"
(b) Generally answered correctly
(c) Few candidates were awarded the full 2 marks for this part of the question. The other candidates just mentioned the division of time between the various data streams, without providing more details.

Question 4

This question specifically targeted file TYPEs not file FORMATs, and students where given an additional clue when asked to identify an area associated with each file type. Half the students understood and gave a correct answer, while the other half mistook the question and gave an answer about different formats of files.

Question 5

Majority of the students got this answer correct and only 5 to 10% had no idea of what software testing is. Straight forward question and answer.

Question 6

Only a few students did not know what SQL is and what it is used for. Most of them also gave a good description of one SQL command.

Question 7

While a considerable number of candidates knew about the symbol table only a few gave a correct answer to what the contents are. Most provided an answer along the line - it contains symbols from the program without actually explaining what the symbols are.

Question 8

Most candidates knew when code optimisation is carried out and gave good examples of such techniques (dead code elimination, loop invariants, etc). Some mentioned removal of spaces and comments, using classes, etc which clearly are not 'code' optimisation techniques.

Question 9

In general students knew what a stack is and what the push and pop functions are used for. However the explanations as to how to use these functions to arrive at the solution were at times unsatisfactory.

Question 10

Parts (a) and (b) of this question were generally answered well by most candidates. The question of part (c) had an error in its formulation, but full marks were awarded to candidates who showed that they knew how the fraction could be represented in binary and what had to be done to float the point in the right direction. The answers of several candidates indicated that they did not know these basic principles.

Question 11

Most candidates answered this question correctly, although candidates seem to have some difficulty with respect to the names of the respective laws.

Question 12

Several candidates did not properly exploit the Don't Care conditions to better simplify the expression.

Question 13

Most candidates indicated the op-code and the operand(s) alone as part of the instruction format, missing out on the optional label and comments. A number of candidates seemed not to be aware that not all op-codes require explicit operands.

Question 14

Most candidates incorrectly gave examples from the Data Transfer group rather than from the (program) Transfer group. Furthermore, despite that the question explicitly stated that the same condition should only be used once, several candidates cited 'jump if zero' and 'jump if not zero' as two separate examples.

Question 15

This question specifically referred to **memory** addressing modes, that is, addressing modes that addressed main memory, therefore, immediate and register addressing modes were not correct answers.

Question 16

(c) The majority of the students did not know what a strongly typed language is. With the plethora of languages that exist, more emphasis should be placed on the typing aspect to distinguish between strongly typed and weakly typed languages.

Question 17

(d) The majority of students did mention the three relationships (one-to-one, one-to-many and many-to-many). Some however mentioned primary key, foreign key and candidate key as being relationships

(e) Some confused E-R diagrams with other diagrammatic representations

Question 18

(a) In general students did have a good knowledge of how the binary search algorithm works. However many students confused it with a binary search tree, others described a sorting algorithm instead

Question 19

(a) Most students explained correctly the concept of inheritance; however some didn't provide an example. Some did not even mention that it's a relationship between a super class (parent) and a subclass (child)

Question 20

(a) A number of students had no idea of what method overloading or overriding are. Some confused the two concepts by switching their meaning. It seems that students could better-explain method overloading (provided a good example), but had difficulties in explaining overriding; failing to mention that its an aspect of polymorphism and that methods need to be defined in related classes.

Comments regarding Paper 2

Question 1

(a) Few candidates provided correct explanations for the two features "Word size" and "Architecture"

(b) Most candidates knew what a "memory read cycle" is and also provided correct examples of the types of lines found in a RAM memory IC. While all candidates knew that ROM is read-only however for some, the address lines are not required!

(c) Most candidates have sound knowledge of interrupts and are aware of "polling" and "vectoring".

Question 2

(a) Almost all candidates provided correct responses to LANs, WANs and MANs.

(b) Two common errors for this part of the question were; forgetting the position of the LSB and NOT appending the parity bit but replacing it with one bit of the code of P! Most candidates mentioned other error checking methods and also other retransmission schemes.

(c) A number of candidates were penalised for providing incomplete answers, such as "A protocol is a set of rules." Almost all candidates mentioned 3 correct protocols (a handful invented their own)

(d) Correct responses were provided for types of transmission media and also for factors effecting rate of data transfer. However though most candidates knew the unit of measurement, most were penalised for providing superficial explanations for the "bandwidth" such as "the speed of transfer ……" without mentioning the keyword "frequency".

(e) A considerable number of candidates incorrectly explained logins as a security measure in the scenario provided.

Question 3

90 to 95% of the students who replied to this JCL question got it right while the rest got only parts of it correct. The question was very basic and outlined the essential and fundamental use of JCL. A elementary knowledge of OS is good to have especially at 'A' level.

Question 4

Only approx. 50% of student who chose this question got it right showing a lack of knowledge within this domain of Analysis, Design, Modelling and software to assist such skills.

Question 5

a) Almost all candidates provided correct responses. Practically everyone know that BNF is a meta-language used to describe the syntax of formal languages.

bi) Unfortunately almost every candidate when asked to do add the "IF .. THEN .. ELSE" construct in the BNF grammar failed to do so properly. Candidates know what BNF is but are not able to write their own rules. Only a few managed to get full marks in this one.

bii) Again when asked to produce something, in this case a parse tree, most of the candidates failed to do so properly. Only a few managed to draw the parse tree. \tab Probably students work more on learning definitions by heart. Only a handful got full marks in this one.

(c) Practically everyone (with varying degrees of detail) knew the difference between compilers and interpreters.

(d) Most got this one right, while some candidates invented definitions on the fly for cross-compilation.

(e) The vast majority of candidates got full marks in this one.

Question 6

a) Only a few students were awarded full marks for this part of the question. Most of the candidates equated a DBMS with a database. Only a few candidates actually mentioned that a DBMS is an interface (abstraction) over a database and that it consists of a collection of tools used to manage databases. Most just mentioned that it uses SQL.

bi) Almost all candidates provided a correct explanation of what a relational database consists of. In most of the cases however not enough details were mentioned.

bii) The majority of candidates knew that a hierarchical database consisted of a tree-like data structure but failed to explain how data (tables) are related in these databases.

biii)Generally answered correctly.

c) Practically every candidate knew about two tasks carried out by the db administrator.

Question 7

(d) Many students correctly explained this concept, however many others gave very short answers or had misconceptions about this term; some stated that it had to do with "the binding of data".

(e) Polymorphism is a complex concept in OO. Most students tried to explain it using examples, however many failed to show how polymorphism is actually implemented.

(f) In general students correctly identified the main classes and the relationships between them (an is-a relationship). However some students depicted wrongly the class diagrams, some failed to correctly draw the subclass of relationship.

Question 8

(a) Most candidates answered this part well, with some exceptions in respect of incorrect filling in of the Karnaugh map and incorrect grouping.

(b) Conversely, few candidates answered the second part correctly. Particularly, few candidates identified which specific bits in the AL and BL registers were representing the 2-bit numbers. It also appears that most candidates did not understand the function of the program, since part (ii) was briefly answered as 'subtraction' by most candidates, whereas only few identified the right shift of register BL required to align the two numbers **before** subtraction.

Chairperson
Board of Examiners
July 2008