UNIVERSITY OF MALTA

THE MATRICULATION EXAMINATION

INTERMEDIATE LEVEL

COMPUTING

May 2017

EXAMINERS' REPORT

MATRICULATION AND SECONDARY EDUCATION

CERTIFICATE EXAMINATIONS BOARD

Computing

Intermediate Level

May 2017

Part 1: Statistical Information

A total of 76 candidates applied for the May 2017 Intermediate Computing examination session.

Three candidates did not present their coursework and were also absent for the written paper. Two candidates did not present the coursework but were present for the written paper. One candidate presented the coursework but was absent for the written paper.

The weight of the written component is 80% of the global examination mark while the remaining 20% is carried by the coursework exercise. For this session, the mean mark for the written paper was 44.4% while that of the coursework amounts to 15.8%.

Chart 1 and Table 1 below show the distribution of the global marks (written paper plus coursework_ as scored by the candidates.
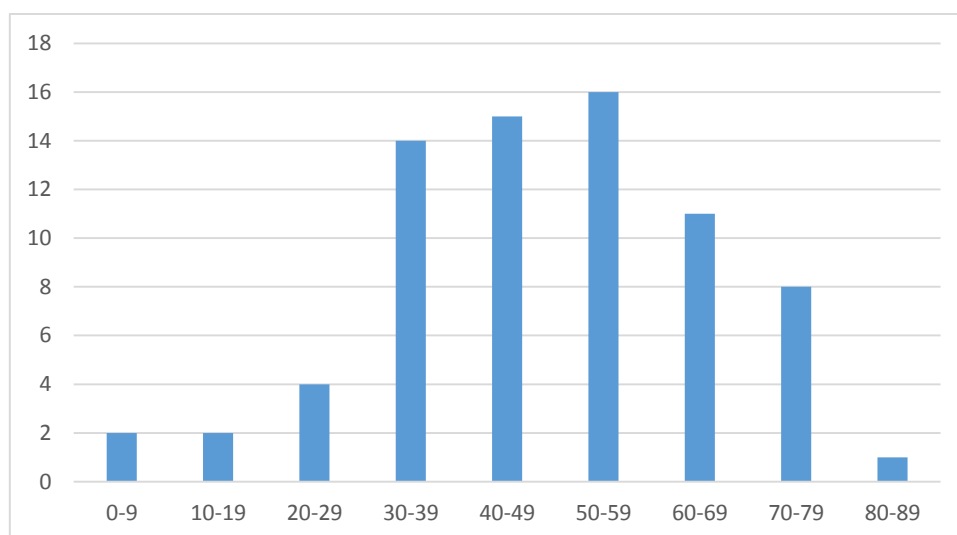
Chart 1

Table 1

Class Intervals	Frequency
0-9	2
10-19	2
20-29	4
30-39	14
40-49	15
50-59	16
60-69	11
70-79	8
80-89	1

Table 2 below shows the grades obtained by the candidates and the percentage of each grade.

Table 2

Grade	Number of Candidates	Percentage of Candidates
A	6	7.9%
B	12	15.8%
C	23	30.3%
D	16	21.1%
E	8	10.5%
F	8	10.5%
Absent*	3	3.9%
TOTAL	76	100%

*Candidates who did not present their coursework AND did not turn up for the written paper.

The Coursework Component

During the coursework moderation exercise, the moderators visited all the colleges that prepared candidates for this examination session. The moderators' feedback was that, in all colleges, the marks allotted by the tutors were fair and therefore these marks were retained. All private candidates were asked to attend for an interview regarding the coursework they presented to the board.

Item Analysis of Written component

Table 3 below shows the maximum mark that could be scored for each of the 12 items in the written paper and the mean mark scored for each item. The table also shows the Facility Index for each item – the index may range from 0, for an item in which candidates obtained 0 marks, to 1.0 for an item in which all candidates scored full marks.

Table 3

Item Number	Maximum Mark	Mean	Facility Index	Choice Index
A1	6	3.0	0.5	
A2	6	1.5	0.3	
A3	6	4.0	0.7	
A4	6	4.0	0.7	
A5	6	3.6	0.6	
A6	6	4.8	0.8	
A7	6	3.4	0.6	
A8	6	1.6	0.3	
A9	6	3.1	0.5	
A10	6	4.5	0.8	
B1	20	11.1	0.6	0.5
B2	20	11.1	0.6	0.4

The Choice Index given in the table above is a measure of the popularity of an item – an index of 0 indicates that an item was not chosen by any candidate; while an index of 1.0 shows that an item was selected by all candidates. The choice index only applies to the two items in Section B because the items in Section A are compulsory.

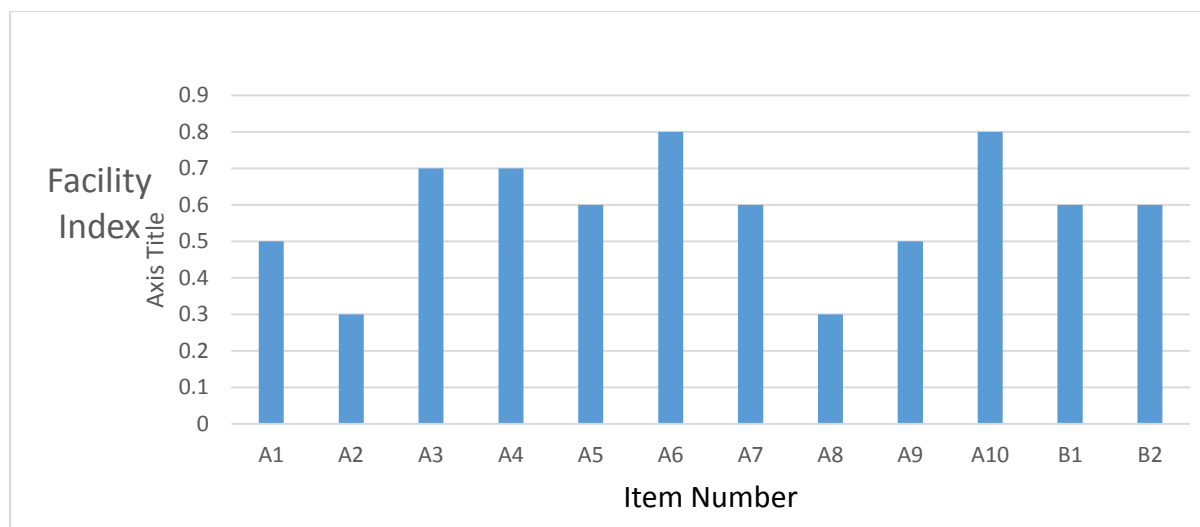Chart 2 below shows the Facility Indices in graphical format.

Chart 2

Table 4 below shows the items in decreasing order of facility, together with the topic that the item tested.

Table 4

Item Number	Facility Index	Topic Tested
A6	0.8	E-Commerce
A10	0.8	Systems Design and Development Methodology
A3	0.7	OOP and programming
A4	0.7	Computer Architecture
A5	0.6	Microprocessor Architecture and Assembly Language
A7	0.6	Data Representation
B1	0.6	Relational Database Design and OOP
B2	0.6	Software Systems Development and Programming
A1	0.5	Truth Tables, Boolean Algebra and Simplification of Logic Circuits
A9	0.5	Network Topologies
A2	0.3	Operating Systems
A8	0.3	Data Communications

Part 2: Comments regarding candidate's performance

A1   A number of candidates performed well in this question. Some candidates lost marks in part a since they didn't interpret the scenario well. Others lost marks in part b since they didn't make use of the laws of Boolean algebra. On the whole, candidates performed well in part c.

A2   Performance in this question was poor. A number of candidates didn't know the role of the Operating System with regards to management. A number of candidate gave an incorrect answer for part b and c stating that a priority scheduler can handle such a situation.

A3   The majority of the candidates performed well in this question about Java. Part d proved to be the most difficult part where candidates had to write an additional piece of code to handle the logic error mentioned in part c.

A4   Candidates generally responded correctly to this question. Some candidates forgot to deduct one address bus when doing the calculation in part a.

A5   Some candidates gave an incorrect example for immediate addressing. The majority of the candidates gave a good example of an opcode and an operand. There were a number of candidates who did not follow well the list of instructions and gave an incorrect answer for registers AX and DX.

A6   Generally candidates showed an understanding of e-Commerce but a good percentage failed to mention the transfer of funds/data or any notion of a transaction. Candidates generally gave correct replies for parts b) and c). In parts d) and e), candidates generally gave correct replies, however answers often lacked specificity such that the answers to d) and e) were often very similar. For part e) candidates generally gave correct replies. The overwhelming majority mentioned the reduced use of transport as one of the points.

A7   Though most candidates had a general idea for part a), many expressed themselves very poorly regarding the need of a universal code. Candidates generally answered correctly for part b) and the majority of candidates gave correct replies for part c). In part d), a sizable percentage of candidates gave the wrong answer of 0-255 or 0 to 127. Candidates generally answered part e) adequately. Most candidates were capable of mentioning the issue of the two representations of 0 im Sign-and-Magnitude.

A8   This question was generally answered poorly. In part a) ii), candidates were particularly poor at explaining noise tolerance. A high percentage of candidates answered part a) iii) incorrectly. In part b) ii), a high percentage of candidates were unable to present an acceptable advantage of frequency modulation.

A9   Part a) of this question was relatively very well answered by most candidates. Parts b) i) to iii) were generally well-answered. Candidates had more difficulty when it came to b) iv) and v), showing a relatively poor understanding of the role of IP addresses and DNS.

A10   This question was generally well answered. The overwhelming majority of candidates gave completely correct answers for part a). Some candidates lost marks in part b), for giving somewhat facile answers, however most showed an understanding of the each stage. In part c), candidates often failed to explain clearly why the design stage needs to follow the requirements analysis and precede implementation, generally focusing only on one rather than both of these.

B1   In the first part of the question about databases, candidates performed well. The majority of the candidates identified well the tables, the primary keys, the foreign keys and their relationships. A number of candidates gave two characteristics with the same meaning for a normalised database. As with regards the second part of the question about Java, few candidates knew why the values are initially set to -1. A number of candidates gave a partial answer how to define an array of objects. Performance in part (iv) was poor. Only few replies had the correct structure and the checks required for the piece of code to function well.

B2   Some candidates gave rather poorly-explained, facile reasons for asking given questions for part a). Parts b), c) and d) were generally well answered. Part e) was often less well-answered than a) to d). Common mistakes included declaring a void method and failing to return a variable, other candidates failed to pass parameters. In part f), quite a large percentage of candidates seem to have the wrong notion of 'scope'. Many incorrectly interpreted 'scope' as the utility of the variable. Most candidates correctly answered part g). Many candidates gave correct variations of this answer for part h). Some candidates failed to correctly implement a loop or reference array elements.

Chairperson
2017 Examination Panel