L-Università ta' Malta

MATSEC
Examinations Board

Examiners' Report

IM Computing

First Session 2019

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A. STATISTICAL INFORMATION

A total of **77** candidates applied for the May 2019 Intermediate Computing examination session.

Nine candidates did not present their coursework, seven of which were also absent for the written paper. The other two candidates who did not present the coursework were present for the written paper. There were no candidates who presented the coursework but were 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 43.8 (out of a maximum of 80) while that of the coursework was 16 (out of a maximum of 20).

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

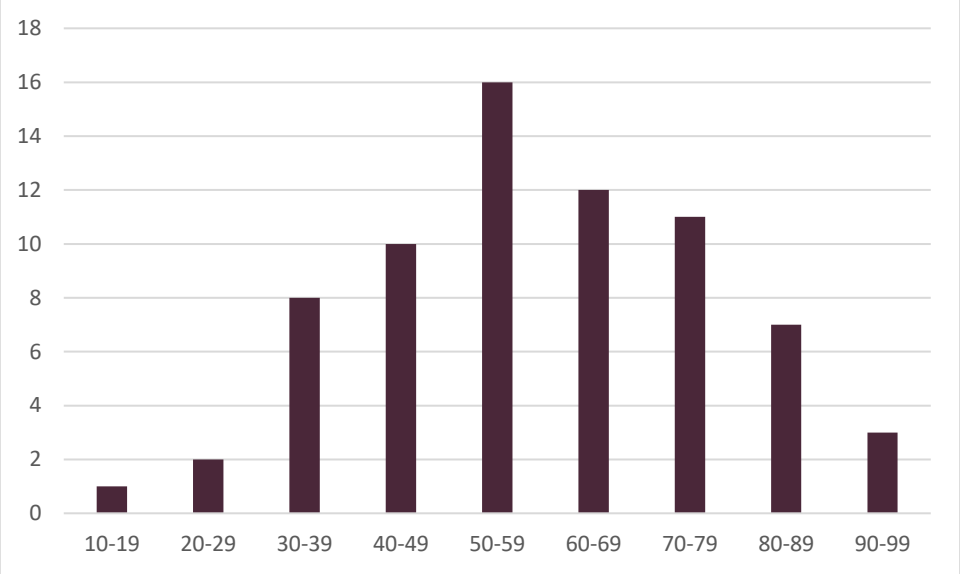

Chart 1

Class Intervals	Frequency
10-19	1
20-29	2
30-39	8
40-49	10
50-59	16
60-69	12
70-79	11
80-89	7
90-99	3

Table 1

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

Grade	Number of Candidates	Percentage of Candidates
A	4	5%
B	16	21%
C	21	27%
D	12	16%
E	9	12%
F	8	10%
Absent*	7	9%
TOTAL	**77**	**100%**

Table 2

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

B. GENERAL REMARKS

General Remarks on Coursework

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.

General Remarks on the Written Examination

Table 3 below shows the Maximum mark that could be scored for each of the 12 items in the written paper, the Mean mark scored and the Standard Deviation 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.

Item Number	Maximum Mark	Mean	Standard Deviation	Facility Index	Choice Index
A1	6	4.1	1.1	0.7	
A2	6	3.5	2.2	0.6	
A3	6	3	1.8	0.5	
A4	6	3.4	2.1	0.6	
A5	6	2.7	2	0.5	
A6	6	2.1	2.2	0.3	
A7	6	4.1	1.5	0.7	
A8	6	2.9	1.8	0.5	
A9	6	3.5	1.7	0.6	
A10	6	3.3	1.5	0.6	
B1	20	9.8	4.4	0.5	0.6
B2	20	13.3	4.8	0.7	0.4

Table 3

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.

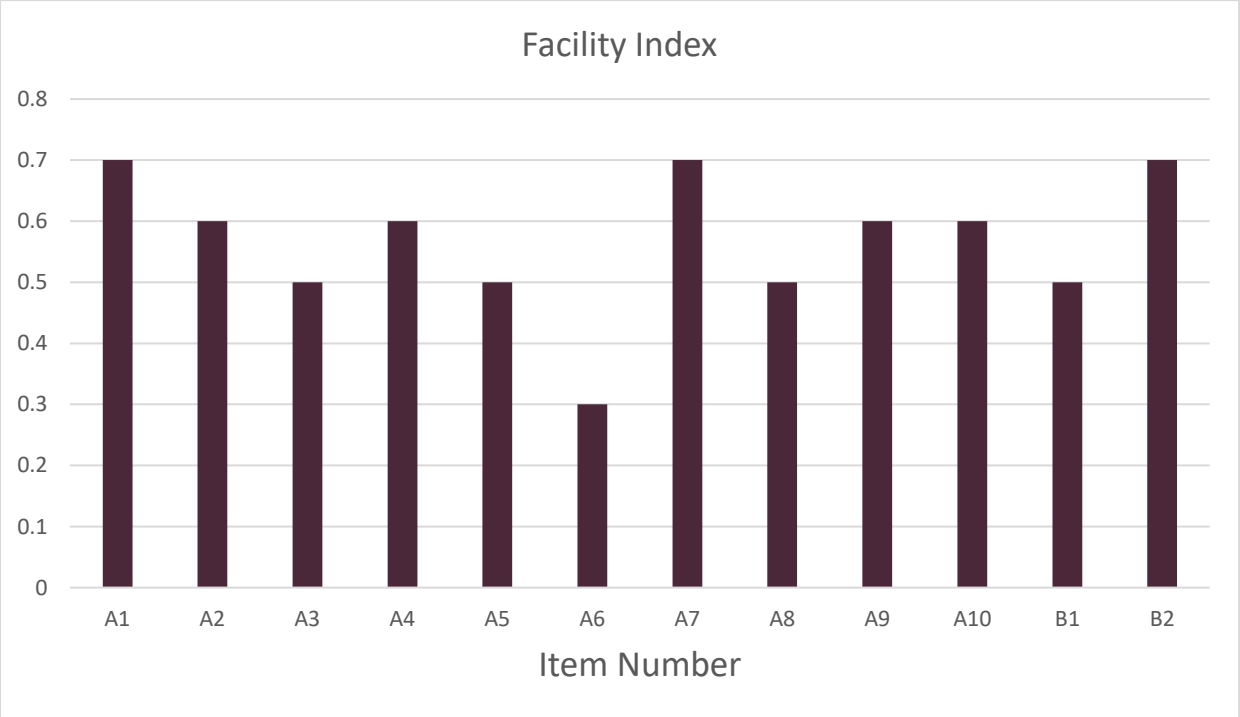

Chart 2

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

Item Number	Facility Index	Topic Tested
A1	0.7	Systems Analysis and Design. Security.
A7	0.7	Numerical and Character Data representation.
B2	0.7	Computer Circuit Logic and design. Java Programming elements and algorithms.
A2	0.6	Logic Circuits, Truth Table and Boolean Expressions.
A4	0.6	Variable scope and parameter passing in Java Programming.
A9	0.6	Data design, Relationships and Keys in Database systems
A10	0.6	Types of Operating Systems and the User Interface on Mobile devices.
A3	0.5	Network Layouts.
A5	0.5	Assembly Language Programming elements.
A8	0.5	Microprocessor Registers, Fetch Execute Cycle, CPU performance.
B1	0.5	Operating Systems: Memory Management, Threads, Scheduling, Polling and Interrupt handling and Deadlock.
A6	0.3	Inheritance and encapsulation in Object Oriented Programming. Other programming paradigms.

Table 4

C. COMMENTS PER QUESTION

Section A

Question 1

A good number of candidates just identified and not outlined another two methods of data collection. In part b, candidates focused their answer mainly on upgrading the old system. The majority of the candidates identified two security measures for part c.

Question 2

The majority of the candidates managed to elicit the Boolean expression for output Y from the truth table. A number of candidates did not simplify till the very last step and stopped at O'P+OP'. There were a number of candidates who did not state the laws used during simplification. A number of candidates also made use of karnaugh maps but it was specifically listed in the exam question to state the laws.

Question 3

In part a of the question, some candidates suggested a mesh topology but an invalid reason was given. In this case, no marks could be awarded since it is not justifiable. In part b, a number of candidates suggested mesh topology which is not justifiable due to higher costs of connectivity. A bus or ring would have been more reasonable.

In part c, the information given in the question specified data integrity and the linking of two departments, but did not speed. Therefore a type of link that was not unnecessarily costly and provided integrity assurance was acceptable. A number of candidates mentioned a switch as an option which was not acceptable. There were a number of answers where a reason was not given.

Question 4

The majority of the candidates knew what is a local variable and identified well the local variable in the method myList(). Part b was also answered well by the majority of the candidates. With regard to part c, a number of candidates did not give a correct explanation why the assignment y[0] = 15 in the body of the method changes z[0] in the calling part of the program.

Question 5

A good number of candidates compared assembly language with object oriented programming when giving reasons why assembly language is rarely used nowadays. In part b, there were a number of candidates who misread the question and did not do the correct amount of iterations requested.

Question 6

Though there were quite a high percentage of correct answers, some candidates seem to mistake attributes for subclasses in part a. A number of candidates lost marks in part b for unclear answers about code efficiency. Some candidates gave answers that showed that they did not understand the term 'impacts'. Candidates generally gave correct answers in part c.

Question 7

The majority of candidates gave a correct answer and adequate working for both parts a and b. In part c, candidates tended to give the correct result, though some mentioned components that are not registers (e.g. data bus). In part b, a number of candidates lost marks for unclear answers that failed to acknowledge the necessity of representing a wide variety of characters in different languages.

Question 8

There was a relatively a high number of candidates who chose an incorrect answer in part a. A sizeable number of candidates lost marks also in part b. In parts c and d, candidates generally gave correct replies. In part e, candidates gave a variety of valid factors here including wordlength and clockspeed.

Question 9

Some candidates lost marks for failing to give sufficient fields rather than for naming unacceptable ones in part a of the question. Candidates generally performed very well in parts b, c and d.

Question 10

In part a, some candidates lost marks for unclear answers. In parts b and c, candidates generally gave correct replies. In part c, while candidates generally gave correct replies, it was quite striking that candidates mentioned points from book-knowledge of Operating Systems in general rather than of mobile OSes in particular. In part d, candidates generally gave correct replies, far too many sticking with the staple answer of 'password' rather than other security features more typical of mobile devices (e.g. fingerprint recognition).

Section B

Question B1

Candidates generally gave correct replies to part a. A sizeable number of candidates gave rather inaccurate replies for logical addresses in part b. In part c, candidates generally gave correct replies, though some seemed to mistake memory fragmentation for disk fragmentation. Again in part d, some candidates gave answers related to disk fragmentation. While most gave correct answers in part e, some answers were vague and non-detailed enough to lose marks.

Candidates generally gave correct replies for parts f, g and h. Candidates also gave very detailed annotated replies for part h. Some candidates lost marks in part i, for failing to clearly state that deadlock involves both processes waiting for a resource the other is holding and hence unable to complete. Candidates generally gave correct replies for part j.

Question B2

The overall performance in the question was generally good in both parts of the question. Few candidates had minor mistakes in the truth table. This occurred since they did not read the preamble of the question well and outputs O and P had to be altered. In part ii, a good number of candidates knew how to make use of Karnaugh maps. In part iii, some candidates made use of Karnaugh maps and consequently did not end up with a simplified logic expression for output P. Some candidates presented two separate logic circuits for signal O and alarm P.

Candidates knew the importance of setting the constructor to public. Some replies to part b ii were not clear when explaining what happens when the line of code is executed. The majority of the candidates mentioned a correct way to store 100 objects of class Town. When constructing the method of the town with the highest population, some candidates did not set the correct data type for the method and others forgot to return the name of the town. In part b v, a number of candidates explained what a bubble sort is but not in relation to the 100 Town objects.

Chairperson

Examiners Panel 2019