



L-Università
ta' Malta

MATSEC
Examinations Board



Examiners' Report

IM Computing

First Session 2021

Examiners' Report (2021): IM Computing

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A. STATISTICAL INFORMATION

A total of **86** candidates applied for the June 2021 Intermediate Computing examination session.

74 sat for the written paper. No project was required as per COVID mitigation measures for this session. The written paper carried 100% of the overall mark.

For this session, the mean mark for the written paper was 50.9 (out of a maximum of 100).

Table 1 shows the distribution of grades for IM Computing for the 2021 first session.

GRADE	A	B	C	D	E	F	ABS	TOTAL
NUMBER	5	17	23	9	8	12	12	86
% OF TOTAL	5.8	19.8	26.7	10.5	9.3	14.0	14.0	100

Table 1: Distribution of grades for IM Computing 2021, First Session

Chart 1 and Table 2 below show the distribution of the global marks (written paper) as scored by the candidates.

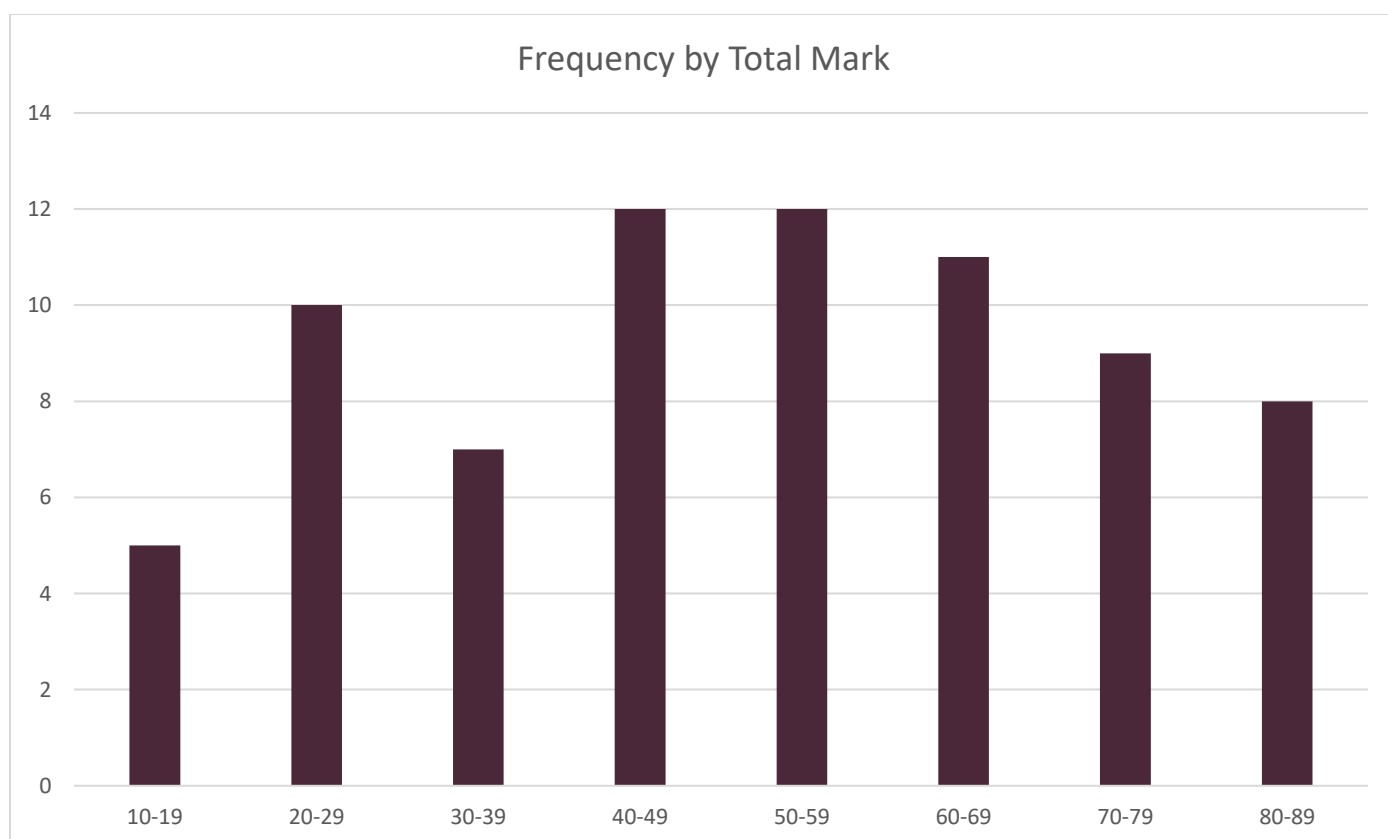


Chart 1

Class Intervals	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89
Frequency	5	10	7	12	12	11	9	8

Table 2

B. GENERAL REMARKS

General Remarks on Coursework

Due to the COVID-19 pandemic there was no coursework requirement for this year and the Section B consisted of one compulsory question.

General Remarks on the Written Examination

Table 3 below shows the Maximum mark that could be scored for each of the 11 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.

Table 3

Item Number	Maximum Mark	Mean	Standard Deviation	Facility Index	Choice Index *
A1	8	3.9	2.1	0.5	
A2	8	3.6	3	0.5	
A3	8	3.3	2.2	0.4	
A4	8	3.4	1.8	0.4	
A5	8	4	1.9	0.5	
A6	8	4.4	2.4	0.6	
A7	8	5.3	2.4	0.7	
A8	8	5.1	2.3	0.6	
A9	8	4.1	1.9	0.5	
A10	8	3.6	1.4	0.5	
B1	20	9.9	4.9	0.5	

*The Choice Index given usually 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. For this session all questions were compulsory so the Choice Index does not apply.

Chart 2 below shows the Facility Indices in graphical format.

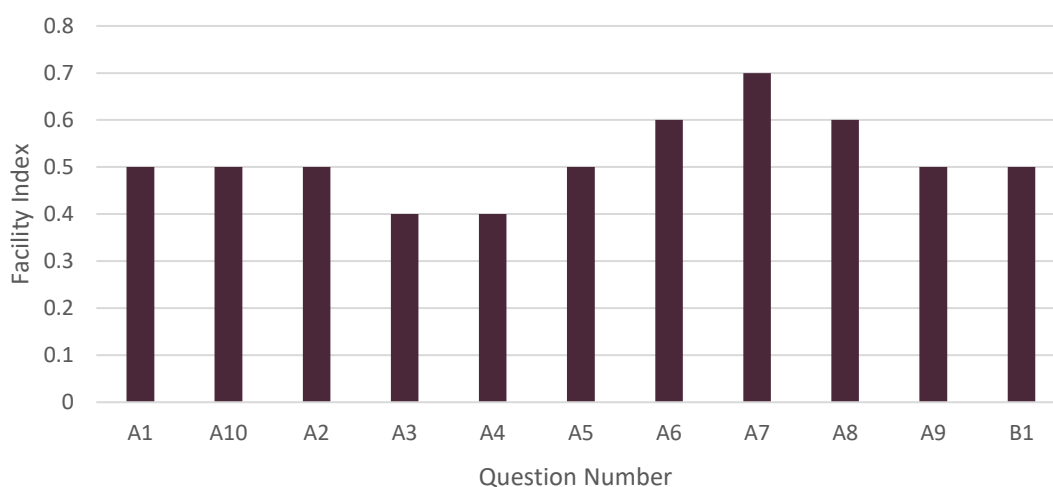


Chart 2: Facility Index

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
A7	0.7	Numeric data conversions - hex to decimal using different binary formats, decimal to binary coded decimal, decimal to binary conversion and vice-versa using fractions. Mention of standard character code systems.
A6	0.6	Definition and function of modem, differentiation of networking cabling types, explanation of network noise, source of noise on WiFi connections.
A8	0.6	Application of a logic circuit to a practical requirement - circuit formula, truth table, circuit design using NAND gates, use of boolean algebra and laws.
A1	0.5	Types of memory devices and uses, RAM, SRAM, DRAM, Cache L1 and L2. PROM, EEPROM role and application to a given practical requirement.
A2	0.5	Operating system interrupt and polling systems, process states, memory compaction and fragmentation.
A5	0.5	Explanation of World-wide Web terms, distinguishing between ISDN and ADSL, data protection principles.
A9	0.5	Assembly language code interpretation, identification of different operand addressing modes and tracing of variable values during execution. Role of assembler and linker. Advantage of assembly language over a high level language.
A10	0.5	Database case - improvement on data design, identification of redundant field and identification of fields appropriate as primary keys and foreign key.
B1	0.5	Given a Java program snippet to explain inheritance, keyword used, advantages and disadvantage of inheritance and syntax of instance creation. Outputs of code given using a set of binary parameter inputs. Type of logic gate represented by the code snippet. Trace of values in array when a loop feeding different parameter values to function is applied. Code required to use do..while loop to reverse display array values.
A3	0.4	Role of OSI layers, features of circuit and packet switching, switching type that characterises email, purpose of parity checking.
A4	0.4	System implementation phase - changeover considerations, advantages of different changeover approaches and activities, phase following implementation.

Table 4

C. COMMENTS PER QUESTION

Section A

Question 1

Candidates generally had little difficulty with parts (a), (b) and (c), making valid points and giving sufficient detail. Most candidates answered part (d)(i). correctly. A relatively large number of candidates lost marks in part (d)(ii) as their answer lacked detail.

Question 2

Candidates generally gave an adequate description of polling in part (a). Most candidates gave a valid answer for part (b)(i), but some of these did not relate their point in part (b)(ii) to address the shortcoming mentioned in part (b)(i). In part (c), quite a number of candidates named two rather than three processes. Quite a large percentage of the answers showed a lack of understanding of the concepts in part (d), often giving points related to disk defragmentation utilities.

Question 3

Candidates generally answered parts (a) and (b) correctly. There were a few vague non-answers to part (c), e.g. it is a layer in the OSI model, however many gave adequate responses. In part (d), the overwhelming majority adequately identified circuit switching and packet switching. Candidates generally answered part (e) correctly. In part (f), quite a number of candidates lost marks for answers that lacked the required detail.

Question 4

A relatively large number of candidates lost marks for mentioning one point or giving vague non-answers for part (a). Most candidates gave adequate advantages of each approach in part (b), however, generally, more did well in discussing direct changeover than phased changeover. In part (c), many candidates gave only one point and lost marks accordingly. Many candidates only named the steps for part (d) and lost marks for failing to give an adequate description of them.

Question 5

The overwhelming majority of candidates correctly explained the function of the terms in part (a); however, it was apparent that a reasonable number had an issue deciphering between a search engine and a web-browser. Candidates generally answered parts (b) and (c) correctly.

Question 6

Most candidates correctly answered part (a), however, quite a number lost marks for failing to identify between the terms modulation and demodulation. Candidates tended to answer part (b)(i) and (b)(ii) correctly, however there was a higher rate of wrong and skipped responses in part (b)(iii). Candidates generally answered part (c) correctly. Some candidates lost marks in part (d) for not distinguishing between network noise, low bandwidth and network overload.

Question 7

The majority of the candidates got part (a) correct. Many candidates failed to represent the given number in BCD in part (b). In part (c) many candidates worked out the fractional part incorrectly and thus failed to provide a correct final answer. The majority of the candidates mentioned two data types instead of the requested of the character codes in part (d).

Question 8

The majority of the candidates answered part (a) correctly. Many candidates answered parts (b) and (d) correctly. The majority of the candidates did not provide a good answer for part (c).

Question 9

The majority of the candidates did not provide a correct answer for part (a). Although they were given the choice to select an operand of their choice, many failed to provide one assembly statement for a register address mode. The majority of the candidates answered part (b) correctly. Many candidates answered part (c) correctly. The majority of the candidates provided a good answer for part (d). Many candidates also provided a good answer for part (e).

Question 10

Although the majority of the candidates got part (a) correct, many still missed the main improvements that were needed in both tables. The majority of the candidates provided an incorrect answer in part (b) regarding the identification of the primary key for the GOALS table. They mentioned the goals field as a primary key while failing to identify a proper composite key for the same table. The majority of the candidates provided very good answers for part (c) and almost all candidates did well. The majority of the candidates answered part (d) correctly.

Section B

Question B1

The majority of the candidates got part (a) incorrect. The majority of the candidates answered part (b) correctly. The majority of the candidates responded very well to part (c). Almost every candidate got part (d) correct. Only a few candidates provided an incorrect answer for part (e). Many candidates provided a correct answer for part (f). The majority of the candidates answered part (g) correctly. The majority of the candidates failed to answer part (h) correctly. Very few candidates answered part (i) correctly.

Chairperson

Examiners Panel 2021