L-Università ta' Malta

MATSEC
Examinations Board

Examiners' Report

Advanced Computing

First Session 2021

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A. STATISTICAL INFORMATION

The total number of candidates who registered to sit for Advanced Computing was **172**, which is **35** candidates more than in 2020.

Table 1 shows the distribution of grades for the Main 2021 session of the examination

GRADE	A	B	C	D	E	F	ABS	TOTAL
NUMBER	12	29	49	35	22	22	3	172
% OF TOTAL	7.0	16.9	28.5	20.3	12.8	12.8	1.7	100

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

B. GENERAL REMARKS

When compared to previous years, on average, candidates performed worse with an average of around 45% achieved per question across Paper I and Paper II. Candidates performed very well in their project (Task 1), with an average mark of 93%. However, this was not reflected in the programming questions of Paper I (average mark of 49%) and Paper II (average mark of 40%). This is probably the fact that Task 1 is simple when compare to other tasks, and whilst candidates were examined on more advanced concepts in their exam, they did not have the opportunity to do earlier in their progression since Task 2 and Task 3 were not issued this year due to COVID-19 mitigation measures.

Candidates performed best in recall-style questions but the attempt to apply knowledge to a particular scenario was generally inadequate. In particular, 47% of candidates performed poorly in the programming question in Paper I (up from 22% in 2020) and 65% also performed poorly in the programming question in Paper II (up from 36% in 2020). It is worth noting that in previous years, candidates had the option to not attempt the programming question in Paper II, whereas this year it was compulsory.

C. COMMENTS ON PAPER I AND PAPER II

Paper I

Question 1

Average Mark: 4.9 / 10

1a. Most candidates answered this question correctly.
1b. Most candidates answered this question correctly.
1c. Responses indicate that candidates performed well in the concept of overriding, but not in overloading.
1d. Responses indicate that most candidates did not know the meaning of the *this* keyword as a reference to the current object.

Question 2

Average Mark: 2.4 / 5

2a. Several candidates confused a firewall with a router or a gateway.
2b. Most candidates answered this question correctly.
2c. Most candidates answered this question correctly.
2d. Most candidates answered this question correctly.

Question 3

Average Mark: 2.5 / 5

3a. Very few candidates were able to associate these scenarios with circuit and message switching.
3b. Most candidates answered this question correctly.
3c. Most candidates answered this question correctly, although several candidates mentioned wireless media instead.

Question 4

Average Mark: 1.7 / 5

Few candidates managed to represent the banking system correctly in its entirety through an ER diagram, modeling all relationships correctly.

Question 5

Average Mark: 1.6 / 5

5a. Responses indicate that few candidates were aware of the meaning of an atomic value.
5b. The attempt of very few candidates to explain four features of a DBMS was adequate.

Question 6

Average Mark: 2.7 / 5

6a. Most candidates were able to answer this question correctly.
6b. Most candidates were only able to list up to two other tasks.

Question 7

Average Mark: 2.4 / 5

7a. Responses indicate that few candidates understood that the feature referred to was Direct memory Access.
7b. Most candidates answered this question correctly.
7c. Responses indicate that very few candidates were aware of the meaning of masking an interrupt.

Question 8

Average Mark: 2.0 / 5

8a. Most candidates answered this question correctly.
8b. Few candidates were able to perform the merge sort. The attempt of several candidates was inadequate as they confused it with other sorting algorithms.

Question 9

Average Mark: 2.6 / 5

9a. A large number of candidates answered this question correctly.
9b. Although several candidates answered part (a) correctly, responses indicate that they still did not appreciate that binary search is more useful when the size of the list grows.

Question 10

Average Mark: 1.4 / 5

Quite a large number of candidates did not obtain any marks, as it was unattempted. The majority of the few candidates who attempted this question performed adequately.

Question 11

Average Mark: 3.1 / 5

Most candidates answered this question correctly.

Question 12

Average Mark: 1.6 / 5

Responses indicate that knowledge between synchronous and asynchronous data transfer in the CPU was lacking.

Question 13

Average Mark: 2.5 / 5

In general, most candidates answered this question correctly. Some candidates' attempt to give adequate examples of General Purpose and Special Purpose registers was inadequate.

Question 14

Average Mark: 2.3 / 5

Some candidates' attempt to distinguish between operands and opcodes was inadequate.

Question 15

Average Mark: 3.7 / 5

Most candidates answered this question correctly. Some candidates' performance inn answering part (b) was poor.

Question 16

Average Mark: 2.2 / 5

Several candidates did not attempt this question. However, the majority of the candidates of those who attempted this question performed well.

Question 17

Average Mark: 2.4 / 5

Responses indicate that knowledge of top-down and bottom-up approaches to system design was lacking.

Question 18

Average Mark: 2.5 / 5

In general, the candidates performed well in this question. The attempt of some candidates to name the three errors was insufficient.

Question 19

Average Mark: 1.3 / 5

Most candidates' attempt to answer this question correctly was inadequate.

Paper II

Question 1

Average Mark: 7.9 / 20
This compulsory question was attempted by 155 candidates.

1a. A large number of candidates were able to answer this question correctly.
1b. Few candidates answered this question correctly.
1c. Most candidates answered this question correctly.
1d. Few candidates answered this question correctly.
1e. Most candidates answered this question correctly.

Question 2

Average Mark: 10.5 / 20
This question was attempted by 87 candidates.

2a. A large number of candidates confused 'backbone' with 'server' and therefore defined the topology as 'star' instead of 'bus'.
2b. Most candidates answered this question correctly. However, responses indicate that only few candidates were aware of Token Passing.
2c. Most candidates answered this question correctly.

Question 3

Average Mark: 8.6 / 20
This question was attempted by 100 candidates.

3a. Most candidates answered this question correctly.
3b. Most candidates answered this question correctly.
3c. Most candidates answered this question correctly but could not list all four conditions, which prevent deadlock from occurring.
3d. Few candidates answered this question correctly.
3e. Most candidates answered this question correctly.

Question 4

Average Mark: 8.4 / 20
This question was attempted by 110 candidates.

4a. Most candidates answered this question correctly.
4b. A large number of candidates answered this question correctly.
4c. Few candidates managed to correctly transform the table to 3rd Normal Form.
4d. Most candidates answered this question correctly.
4e. A large number of candidates answered this question correctly.

Question 5

Average Mark: 10.8 / 20
This question was attempted by 58 candidates.

In general, candidates who attempted this question performed really well, with most obtaining full or almost-full marks. This is not reflected in the average mark because there were some other candidates who started to attempt the question and left the majority of it incomplete.

Question 6

Average Mark: 7.4 / 20
This question was attempted by 58 candidates.

Candidates who attempted this question performed poorly. Responses indicate that many candidates were not familiar with asynchronous read/write requests to memory. Background about memory decoders was found to be lacking in general.

Question 7

Average Mark: 7.4 / 20
This question was attempted by 69 candidates.

Many candidates' performance in this question was inadequate and poor. In particular, most candidates struggled with the BNF notation and the code optimisation questions.

Question 8

Average Mark: 9.8 / 20
This question was attempted by 142 candidates.

Responses indicate that the main difficulties in answering this question were related to identifying code snippets which exhibited specific types of addressing modes (part a), as well as the treatment of different types of assemblers (part d).

D. CONCLUDING COMMENTS

Whilst grades obtained by candidates are broadly comparable with previous sessions, it was noted that there is an elevated level of struggle with scenario-based and, much more with programming questions. It is indeed useful to be able to recall information about various topics, but going forward into careers in a knowledge economy, candidates need to focus more on their ability to apply knowledge to solve problems. This will serve the candidates well in the following stages of their education.

Chairperson
Examination Panel 2021