

# EXAMINERS' REPORT

## AM COMPUTING

FIRST SESSION 2018



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## General Statistics

The distribution of grades awarded in the May 2018 session are provided in the table below:

*Table 1: Distribution of grades awarded in May 2018.*

GRADE	A	B	C	D	E	F	abs	TOTAL
NUMBER	13	24	41	29	16	8	14	145
% OF TOTAL	9.0	16.6	28.3	20.0	11.0	5.5	9.7	100

## General Comment by Markers

### Paper 1

#### Question 1

- Most candidates answered this question correctly.
- Most candidates answered this question correctly.
- Relatively few candidates could answer this question. Some advocated adding getters and setters in MyClass, which would have implied changes in Main as well.

#### Question 2

- Most candidates answered this question correctly.
- Some candidates could not distinguish between data structures and programming structures such as loops or if conditions. Others thought that the question referred to "data types".

#### Question 3

- Answers related to baud rate and bandwidth indicated lack of understanding of the difference between them.
- Responses given confused the definitions and acronyms.

#### Question 4

- Very few candidates knew what a datagram consists of. Most thought that it had to do with a "use case diagram".
- Most candidates could recall the names of three layers in the OSI model, but very few could satisfactorily describe what their purpose was.

#### Question 5

- Most candidates answered this question correctly.
- Most candidates answered this question correctly, however focused on detection of errors by language translators, rather than the actual generation of executable code.

### Question 6

- a. Most candidates answered this question correctly.
- b. Very few candidates answered this question correctly.

### Question 7

- a. Several candidates answered this question correctly.
- b. Most candidates answered this question correctly.

### Question 8

- a. Several responses included a feasibility study, rather than identification of the problem, as the first step.
- b. Most candidates answered this question correctly, however several catered for the case when the book is not found in the list of book titles.

### Question 9

- a. Most candidates answered this question correctly.
- b. Most candidates answered this question correctly.

### Question 10

- a. Most candidates knew what parallel changeover was, but could not properly describe pilot changeover.
- b. Several candidates answered this question correctly.
- c. Most candidates answered this question correctly.

### Question 11

- a. Only a few candidates were able to answer this question completely.
- b. Most candidates confused semantics with syntax.

### Question 12

- a. Most candidates answered this question correctly.
- b. Most candidates answered this question correctly.

### Question 13

- a. Most candidates answered this question correctly.
- b. Most candidates answered this question correctly.
- c. Most candidates answered this question correctly.

### Question 14

- a. Several candidates confused binary search with linear search.
- b. Most candidates answered this question correctly.
- c. Several candidates only drew part of the binary tree.

### Question 15

Candidates did very well overall in this question. In part (a), some candidates converted the hexadecimal number to binary instead of to decimal as required.

### Question 16

In part (b), a large number of candidates did not do the normalisation required in converting to floating-point representation.

### Question 17

There was a common issue where candidates did not know how to use don't care conditions, some candidates even converted them to false or true values instead of using them to minimise the expressions. A common issue in the Karnaugh map technique was enclosing all don't care conditions as if they were true values. Another common issue was using more rectangles than required, for example including both "B AND NOT C" and "A and B", when one of the two was enough to cover the term "A and B and NOT C". Also, some candidates tried to simplify after obtaining a minimised expression from Karnaugh maps, which should not be needed.

### Question 18

For part (a), a common issue was to give  $2^{16}$  instead of  $2^{12}$ . Part (c) was answered correctly by most candidates, but some still got it wrong, even though the number of bytes is simply the number of bits divided by 8.

### Question 19

Generally, candidates who knew what RISC and CISC are did well. There were a few common misconceptions, for example giving Macs as an example of RISC and Intel as an example of CISC, when Mac desktops and laptops have switched their processors from PowerPC to Intel x86 more than a decade ago. (Apple iOS devices do use the ARM processor which is RISC.) Also, some candidates listed simple instructions such as INCrement as typical of RISC, which is incorrect: since RISC have reduced instruction sets they have less instructions and they do not have an instruction for INC, that would have to be converted to an ADDition with an immediate value of 1.

### Question 20

Most candidates answered this question correctly.

## Paper II

### Question 1

On the whole, the candidates did very well. In part (c), some candidates tried to simplify after obtaining a minimised expression from Karnaugh maps, which should not be needed. In part (d), some candidates left consecutive NOT gates (or NAND gates used as NOT gates) in the diagram; consecutive NOT gates can be cancelled out. In part (e)(ii), some candidates negated 0010.0100 by first complementing to 1101.1011 (correct first step) and then adding 0001.0000, which is incorrect; they should have added 0000.0001 instead.

### Question 2

There were no real issues with parts (a) and (b). However, in parts (c) and (d), there were many candidates that did not know what DMA is.

### Question 3

- a. Few candidates knew what a page fault was, and most thought that it was due to page corruption.
- b. Most candidates were familiar with the concept of deadlock, although not all could come up with mechanisms for avoiding and detecting deadlock, but rather instead gave solutions as to how to get rid of deadlock once it is detected.
- c. Most candidates answered this question correctly.
- d. Most candidates answered this question correctly.

### Question 4

There were a few off-by-one errors when determining the ASCII characters, otherwise candidates did very well in parts (a) and (c). For part (b), most candidates did very well, but a few did not know the relationship between ax and its lower/higher bytes, even though the question explicitly stated that a1 is the low byte of ax. For parts (d), (e) and (f) there were no notable issues.

### Question 5

- a. Most candidates answered this question correctly.
- b. Few candidates knew how a URL is converted to an IP address.
- c. Most candidates answered this question correctly.
- d. Most candidates answered this question correctly, however some referred to e-business and distance learning, which could not be accepted.

### Question 6

- a. Roughly half of the respondents answered this question correctly.
- b. Most candidates answered this question correctly.
- c. Few candidates were able to identify three suitable similarities between natural and formal languages.
- d. Few candidates answered this question correctly; most had the impression that just-in-time compilation is performed just before, not during, runtime.

### Question 7

- a. Most candidates answered this question correctly.
- b. Most candidates answered this question correctly.
- c. Most candidates answered this question correctly.

### Question 8

- a. Most candidates answered this question correctly, although some wrongly first created an instance of the class with a default constructor, and then proceeded to call the other constructor specified in the code, passing a colour.
- b. Most candidates answered this question correctly.
- c. Most candidates answered this question correctly.
- d. Most candidates answered this question correctly.

Chairperson  
2018 Examination Panel