DUBLIN INSTITUTE OF TECHNOLOGY

DT211 BSc. (Honours) Degree in Computer Science (Infrastructure)

DT228 BSc. (Honours) Degree in Computer Science

Year 1

WINTER EXAMINATIONS 2017/2018

INFORMATION TECHNOLOGY FUNDAMENTALS [CMPU1012]

DR. ART SLOAN
DR. DEIRDRE LILLIS

MONDAY 15TH JANUARY 9.30 A.M. – 11.30 A.M.

TWO HOURS

ANSWER **QUESTION 1** AND **ANY TWO** QUESTIONS OF THE REMAINING THREE AVAILABLE.

QUESTION 1 CARRIES 40 MARKS WHILE ALL FURTHER QUESTIONS EACH CARRY 30 MARKS.

1. **Compulsory**

(a) List some of the ways a digital computer can model data or information. Also, briefly describe how digital microprocessors are included in everyday devices.

(10 marks)

(b) Define, very briefly, the purpose of a CPU (Central Processing Unit). What are three major components of a CPU? Lastly, give brief examples of RAM (Random Access Memory) and ROM (Read Only Memory).

(10 marks)

(c) Describe the use of USB (Universal Serial Bus) for input, output and storage devices on a personal computer system.

(10 marks)

(d) What are the main principles of von Neumann Architecture? Also, describe some of the features of 'First Generation' computers.

(10 marks)

2. **(a)** Give an example of a business (organisational) problem that might be solved by computerised information systems or applications, briefly outlining typical information systems or applications that might be implemented.

(10 marks)

(b) What are some of the major aspects and features of Systems Analysis and Design as stages in the development of new systems?

(10 marks)

(c) Give an account of computer system viruses in terms of information systems security concerns. You might include a general definition and five examples.

(10 marks)

3. **(a)** What are some of the major considerations and features of interface analysis and design as a means of reporting on the systems design principle of user centredness?

(10 marks)

(b) What are some of the main aspects of a project team, when these teams are set up for information systems projects?

(10 marks)

(c) What makes an information system complex, and what are the issues with such complexity?

(10 marks)

4. **(a)** Describe Artificial Intelligence (AI) as an information technology discipline. List five examples of information functions attributable to a 'Machine Intelligence Quotient'.

(10 marks)

(b) Businesses often need to exchange information with organisations outside of theirs. How do computers help in the secure management of such information exchange?

(10 marks)

(c) Describe the use of computers in the domain of science for molecular studies, often associated with quantum mechanics.

(10 marks)