**ATHLONE INSTITUTE OF TECHNOLOGY**

**FACULTY OF ENGINEERING & INFORMATICS**

**SEMESTER 2 EXAMINATIONS 2018**

**Summer Session**



**B.Eng. in Software Engineering**

**B.Sc in Network Management and Cloud Infrastructure**

**B.Sc. in Software Design (Cloud Computing)**

**B.Sc. in Software Design (Game Development)**

**AWARD YEAR**

**THE ENGINEER IN SOCIETY**

**External Examiner(s): Dr Steven Davy**

**Mr Jerh O’Connor**

**Mr Tom Nolan**

**Mr Terry Moore**

**Dr Norah Power**

**Mr Padraig Brennan**

**Internal Examiner(s): Mr Alan Duffy**

**Mr. Seamus Ryan**

**Instructions to candidates:**

Answer ANY three questions.

Please use separate answer books for section A and Section B

All questions carry equal marks (20 marks).

**Time Allowed: TWO (2) hours.**

**No. of pages including cover sheet: 4**

**Section A**

Q. 1

(a) Ireland is home to the international operations of some of the biggest names in technology, including Facebook, Google and Apple. This situation poses challenges for Ireland’s data protection laws. Explain the primary legal provisions governing data protection in Ireland with specific reference to the Act and to the Office of the Data Protection Commissioner.

12 Marks

(b) Discuss the alignment of Irish Law to EU Law in relation to the various aspects of data Protection

8 Marks **[20/60 Marks]**

Q. 2

(a) Andy approached Sophie, a software engineer, to write a computer program that would facilitate his new business venture. Andy gave Sophie a written contract that outlines the terms of the proposed arrangement. Sophie approaches you for advice. Outline the key elements that should be included in this contract.

10 Marks

Sophie then seeks to how contracts are enforced in the event of a breach by either party. Please advise Sophie accordingly, with reference to case law.

10 Marks

**[20/60 Marks]**

**SECTION B**

Q.3 Yolanda is a new hire in a product design team for a software company that is developing new and more powerful versions of the kind of packet-sniffing and email scanning software systems used by law enforcement agencies and large corporations to monitor data traffic for illegal activities. This kind of software might, for example, be programmed to detect illegal downloads of copyrighted materials, or to flag for review, email keywords like ‘bomb,’ ‘steal,’ or ‘bribe.’ She is a parent of two small children, with parents and friends who are deeply proud of her achievements. She is looking forward to using this first job to cultivate a reputation in the industry for being an excellent software engineer.

One day, she happens to overhear her supervisor chatting with another supervisor about a new contract the company has recently received from a foreign government. She happens to recognize the name of this country as one that is currently run by an oppressive military regime that routinely imprisons its citizens without trial or other due process. The United Nations has strongly criticized this country’s human rights record, and many international organizations have condemned its practices.

She realizes that the product her team is working on is part of the company’s contract with this government; and in fact, she has been assigned specifically to develop the part of the product that searches for specific keyword strings in private emails, texts, social networking messages and phone conversations. Reviewing the specs for her task, she realizes that her contribution to the product will almost certainly be used to identify conversations between private citizens of this country in which there is any specific discussion of their government or its policies, and especially those in which words like ‘reform,’ ‘injustice,’ ‘corruption, ‘due process’ or ‘human rights’ occur.

The professional engineering body of which Yolanda is a member has a code of ethics which includes the following paragraph:

“Engineers shall hold paramount the safety, health, and welfare of the public. If the engineers' judgment is overruled under circumstances that endanger life or property, they shall notify their employer or client and such other authority as may be appropriate.”

1. Who are the various stakeholders in this scenario, and what does each have at stake in Yolanda’s task? 10 marks

2. What should Yolanda do? Outline her options, select your preferred approach and justify. 10 marks

(Note; this question is not testing your personal ethics, only your knowledge and understanding of the ethical framework).

**[20/60 Marks]**

Q4 “"I want to stress the importance of being young and technical. Young people are just smarter…….. Young people just have simpler lives. We may not own a car. We may not have family. Simplicity in life allows you to focus on what's important."

(Mark Zuckerberg, CEO Facebook, 2007)

(a) What are the career implications of the above statement for a graduate software engineer? 10 marks

(b) Discuss the ways in which the concepts of lifelong learning and CPD can contribute to the career of a software engineer. 10 marks

**[20/60 Marks]**