**ATHLONE INSTITUTE OF TECHNOLOGY**

**SCHOOL OF ENGINEERING**

**SEMESTER 2 EXAMINATIONS 2015**

**May Session**

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**BSc. IN Software Design (Web Development)**

**BSc. IN Software Design (Game Development)**

**YEAR 4**

**LAW, ETHICS, COMPUTERS AND SOCIETY**

**External Examiner(s): Mr Damien Marshall**

**Dr Chris Exton**

**Internal Examiner(s): Mr. Seamus Ryan**

**Instructions to candidates:**

Answer ANY three questions.

All questions carry equal marks (20 marks).

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

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

Q.1 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]**

Q2 Three years ago, John Dougan was working as a senior software engineer with Murphysoft Consultants Ltd, writing code as part of a team for large business clients. While working there, he wrote some short programs in his spare time, for his brother-in-laws bakery business. He saw an opportunity, left his job, and devised a software package which he now markets under the name “Prodoco”. His customers are small and medium sized bakeries in Ireland and the UK.

He is currently faced with two intellectual property issues and needs your advice.

(a) His former employer, Murphysoft is alleging that Prodoco was written while he worked for them and as such, they own the copyright of the software. Advise John on the legal position and how he should proceed. 10 marks

(b) He has become aware that a Belgian software house, Sneijder BV are marketing a similar product across Europe, in fact, John believes it to be a copy of his code with the user screens translated into French and German. Advise John on his rights and how he should proceed. 10 marks

**[20/60 Marks]**

Q3 “Artificial Intelligence (AI) could spell the end of the human race.”

*Stephen Hawking (2014)*

Hawking is among top AI researchers from industry and academia who recently signed an [open letter](http://futureoflife.org/misc/open_letter) from the Future of Life Institute. The letter argues that rapid progress in AI is making it timely to research not only how to make AI more capable, but also how to make it robust and beneficial.

(a). Is AI a threat? Outline the concerns expressed by Hawking and others as well as the views of the naysayers.

10 marks

(b) Discussthe desirability and practicality of restricting progress in AI in order to assuage the concerns of Hawking and the Future of Life Institute.

10 marks

**[20/60 Marks]**

Q4 “The harsh reality is that in the tech world, companies prefer to hire young, inexperienced, engineers.”

*Vivek Wadhwa 2010*

(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]**