Q1 This is an issue dealt with under the Professional / Business Ethics banner. The student has discussed similar scenarios. There is no prescriptive answer. I am looking for a balanced approach, persuasive argument and an ability to think beyond the obvious.

1. The stakeholders are:

Yolanda and her family. Clearly her career success is dependent on an early win. If she sets aside the ethical concern, a successful result on this project will set her on her way.

Her employer and it’s shareholders. The company clearly have a background in this technology space. As stated in the case, the technology can be used for good or ill, depending on who is using it….. like most technology. The shareholders have staked their money on this company being successful.

Her fellow employees. Just like Yolanda herself, these technical and non-technical employees have a stake in the project and the company being a success.

The oppressive regimes. Clearly from their perspective, their interests are served by getting their hands on this software and using it in order to cling on to power. All regimes will use technology to cling on to power.

The citizens of these oppressive regimes. It is implied in the case that the citizenry of these oppressive regimes will have their privacy breached by Yolanda’s project. They will suffer torture and imprisonment if they are caught by Yolanda’s software. 10 marks

(b) The list of options, are as follows: This is not an exhaustive list.

1. Get on with it. She’s not the one doing the torturing. Her product can be used for good or ill, like most products. If one follows her logic, then no one would design or manufacture guns. Besides it’s good for her career to be compliant. It may damage her future prospects if she is seen as an awkward employee.
2. If she is not happy to proceed, then she should raise her concerns with her supervisor. Her professional code of ethics is probably his/her supervisor’s professional code of ethics. The supervisor may not have considered the ethical implications, and may thank her for elevating her concerns.
3. If her supervisor does not share her concern, then she may choose to elevate beyond her supervisor. The same process applies here. Either she will be thanked for sharing her concerns or she will be instructed to get on with it. Either way she has ruptured her relationship with her supervisor.
4. At this point, if the task is repugnant to her, she may leave the company. This may have serious career implications.
5. She may become a whistleblower, either from within or outside the organisation. This requires huge energy and commitment, as well as a preparedness to be shunned, threatened or intimidated by her co-workers.

The student is required to outline these options, along with the implications and then to select a preferred approach and justify. 10 marks

Q2 This question is designed to test not just the student’s knowledge of copyright law but its application to the software industry and how a copyright holder might assert his rights.

(a) The question of whether the copyright belongs to John or his old employer will be determined by the judge based on the evidence presented by both sides. The burden of proof is on on Murphysoft. Even if the initial programs were written in his spare time, He may have weakened his defence by using a company laptop or other resources. The package called prodoco may be based on the initial programs or not… The idea behind the package is not protected by copyright, just the code itself. Again, Murphysoft will attempt to point to similarities between the two as this supports their case. A third issue might be the issue of the similarity between Prodoco and programs which John was working on while at Murphysoft. I think that based on the evidence as presented, Murphysoft will not succeed. 10 marks

(b) Sniejder BV appear to have taken Johns package and simply translated the user interface. If this is the case, then they have breached John’s copyright and John can force them to stop selling the package and he can also secure damages. There are two difficulties. Firstly, he must take his legal action in the Netherlands, with all the language issues and the extra costs. He must also prove, to the satisfaction of the judge, that the program is his and that the Sniejder package is based on his. To do this he may have to get an expert witness to point to similarities in the structure of the program, or the code itself. As an aside, the student might mention that, If he is successful in defending his copyright, John may have the opportunity to expand his business by selling into Europe.

Q3 (a) This question addresses societal issues associated with computer technology and the internet. This topic and the associated articles were discussed in the classroom. The student must discuss both sides of the story and avoid jumping on any of the bandwagons presenting themselves.

Hawking and Musk and others raised this hare in November 2014. They are not the first. Science fiction and movies have focussed on concerns about rampant AI and robots attacking it’s creator certainly for the last half century.

The Future of Life Institute issued a measured document in December which focussed on the potential for good associated with AI. They did flag the need for some kind of process to ensure the effort was on societal benefit. Specifically, they stated “We recommend expanded research aimed at ensuring that increasingly capable AI systems are robust and beneficial: our AI systems must do what we want them to do”.

In essence, Hawking et al are concerned that rampant AI may create a non-human entity which learns more quickly than man. In theory this could threaten the future of mankind.

In January, [Eric Horvitz](http://research.microsoft.com/en-us/um/people/horvitz/), managing director of Microsoft Research, among others, poured cold water on the idea and expressed concern that these statements might scare organisations and researchers away from furthering beneficial AI research.

10 marks

(b) The difficulty with AI research as it is currently conceived is that it is privately funded and one can assume, focussed on private benefit. That is not to say that societal benefits won’t flow from such research, just that societal benefit is secondary. Thus efforts at ensuring robustness and benefit will be difficult to achieve. The open letter presupposes a kind of international governing body to decide on the robustness and benefit. This goes against the nature of AI research to date. Individual business entities like Google, IBM and Microsoft must serve their shareholders. Even if these could bury their differences, governments will use AI to enhance their international position and their power relative to other nations. This makes the practicality of the Future of Life initiative difficult to achieve. 10 marks

Q4 (a) This question is based on three articles discussed on the course. The pace of change in the software industry means that skills quickly become obsolete. So fresh young graduates are cheaper than experienced engineers, and just as useful…. Maybe. The implications are that engineers must either try to stay ahead of the curve or migrate into a management role, or find a new career path. 10 marks

(b) LLL is more significant in the rapidly evolving software engineering industry than just about any other sector. The responsibility lies squarely with the individual. Even though employer initiatives such as continuing professional development (CPD) can help, it is ultimately up to the individual to take charge of his/her own career development. Wadhra’s article paints a depressing picture which suggests that software, and technology in general is for the young. He suggests that an exit strategy is advisable.

10 marks