Design and Technology

Section III

15 marks
Attempt ONE question from Questions 12–14
Allow about 40 minutes for this section

Answer the question in a writing booklet. Extra writing booklets are available.

Marks

Question 12 (15 marks)

Read the following case study of an innovation. Use this case and your own case study of innovation to answer parts (a)–(c).

> **Australian sparks new innovation: The 'light chip'**
>
> Australian researchers have developed a technique to convert electrical signals on silicon into light, which some suggest could spark the next revolution in computing. The conversion of such electrical signals into light in devices such as microchips will enable computers to transmit data at the speed of light, resulting in almost unlimited computing power. 'Much work remains to be done, but we believe this opens up a new window of opportunity for Australia in the global computer industry, which is worth billions of dollars a year' said Professor Green (University of NSW).

(a) Describe TWO ways in which developers of such a new innovation can protect their rights to the idea or process. **2**

(b) Identify the key factors involved in the success (or otherwise) of your own case study of an innovation. Explain how these factors might impact on the success or otherwise of the 'light chip' innovation. **5**

(c) Critically assess some of the possible environmental, economic and social implications of this new 'light chip' innovation. **8**

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2. Developers of new innovations can protect their rights to the ideas or process by a number of ways. The can patent their product with IP Australia. This is a temporary monopoly with lasts 20yrs & must be applied for by a registering with the government.

They could copyright their ideas, which does not involve a government agency or they could get the final appearance of the design registered. Trade secret agreements can also be entered into with people amongst those working on the design.

b. My innovation case study was the 'fast skin', full body swimming costume by Speedo. It used a combination of polyester & spandex material with ridges which was then coated with teflon to imitate shark's skin.

This innovation was highly successful for a number of reasons. Firstly, the desire to win is very strong especially amongst sports competitors. This desire to win means that competitors will do almost anything to have an advantage over their competition. The 'fast skin' swimming costume offered competitors an advantage as it was proven to increase performers speed by as much as 7.8%, due to its water resistance. Another factor involved in the success of the innovation was the timing of its release. The costume was released not long before the 2000 Sydney Olympics. Not only did this increase the desire to win & hence the desire to own the swimming costume, it also proved to be a fruitful marketing opportunity. Swimmers who won medals at the Olympics wearing this swimming costume highlighted its success. Also, having big

name successful swimmers, such as Ian Thorpe, compete in & advertise these swimming costumes helped to make them successful due to the credibility of the swimmers wearing them.

These factors may also impact on the success of the 'light clip' innovation. While the desire to win does not relate to this innovation, a similar motivation, the desire to be better does. Humans are very competitive & the desire to have the best & most up to date technology could fuel many Australians to purchase it, resulting in its success. The timing of the release of the innovation could also be a contributing factor as if this factor is released when interest in technology is at its peak, many will want to purchase it. However if it was to be released during a time of poverty, [redacted] at the introduction of a

new tax, for example GST, or when there is another economic change people will need to adjust to, then the innovation will not be successful as it is a luxury not a necessity & if money is low then people will not be interested.

c. A possible environmental implication of this new light chip innovation could be the effect of radiation as a result of data being able to travel at the speed of light. If radiation is produced as a result of this technique it could have a detrimental effect on humans & their environment. Also, increased time on the computer could mean that more computers will be used, more electricity & power will be used & more fossil fuels & other non-renewable materials will be used to create this electricity needed to

power the increased numbers of computers. However, increased ~~access~~ access & use of computers could enable people who would not be made aware of enviramental issues or organisations they could join, aware of these things which could result in greater enviramental awareness & a growth in the number of members & donations ~~to~~ to ~~the~~ Green-Peace for example. However prevention is better then cure & it ~~was~~ the increased enviramental awareness would be ~~almost~~ cancel out if the source providing this awareness was damaging the enviroment itself.

An economic implication could be the impact on the Australian economy. As stated by Professor Green "... the global computer industry ... is worth billions of dollars a year." As this innovation is

Australian, Australia would be able to capitalise on this innovation & export it to other parts of the world. As global computer technology is a growing industry, it is likely the innovation will be in high demand, resulting in the growth of the Australian economy. However, as the computer technology market is dominated by overseas corporations such as Microsoft, increased use of computers would mean a higher demand for computers, software & parts which would need to be imported from other countries & would give no profit to Australia.

A number of social implications would also arise with the invention of the light chip innovation. If computers could be used with almost unlimited access, how long would be an acceptable amount

of time do use computers for + would excess use be damaging to people's health) Once businesses started to use this technology, others would have to quickly follow putting increased strain on small businesses. With families, would the introduction of this technology mean that people would have to purchase it to be seen as socially elite or acceptable. Would the introduction of more ~~Would~~ expensive technology increase the social divisions already in place? With greater access to computers, so too would there be greater access to the internet + e-mail + ~~the~~ issues such as was when it would be socially acceptable to use e-mail to contact people such as bosses, prospective employees, friends + other people. The increase of computers + e-mail could see the decrease of ~~a~~ telephones

& verbal & physical communicatia