Answers

Task 1

Freedom Computers is a charity which sends old computers from the UK to developing countries. When the charity receives an old computer, they first erase and reformat the hard disks so that no personal data is left on them. They then install Windows XP, so that the users of the computers don’t have to pay for an operating system.

The charity no longer sends out any CRT displays – those that they receive are sent for recycling. Instead, it only sends flat panel displays.

a) Explain **two** reasons why Freedom Computers no longer send CRT displays and instead sends flat-screen displays.

CRT screens take a lot more power to run than LCD screens (i.e. flat screens), and as many countries struggle to meet current energy needs, this adds to their problems. Better to recycle the old equipment and only send out flat screens which use much less power.

They are also lighter and more compact, therefore less expensive to ship.

They take up less desk space as they are smaller in size.

b) Developing countries include Burma, Libya, Cuba, Somalia, Ethiopia and others.

i) Discuss the barriers these countries have to better information technology access.

General poverty and low standards of living mean low tax revenues and a lack of expenditure on necessary infrastructure.

The lack of infrastructure such as reliable electricity supply and broadband Internet connections are barriers to using IT. This is also a barrier to creating new start-up companies which might make use of IT.

There is little chance in some countries of students being able to get any sort of work experience using IT.

ii) Discuss what wealthy, developed countries can do to help to overcome these barriers.

Aid from wealthy countries can have a limited impact on the use of IT. It is generally not possible to catapult a very low-tech country into a high-tech world.

An exception has been the introduction of mobile phones. These have revolutionised telephone communication in virtually every country in the world. In some cases they have allowed countries to bypass technologies such as broadband and go straight to technologies such as 4G.

Wealthy countries need to be considerate to the circumstances of the country. For instance, the clockwork radio invented by Trevor Baylis was successful as the invention took into account the fact that many people in developing countries couldn’t afford batteries.

Task 2

1. Discuss the lack of a good broadband service would have on a small business operating in a rural area in the UK.

Internet speeds have a direct impact on productivity, for example, sending files and downloading files can take much longer with a slow Internet connection.

Many organisations use cloud-based systems and no broadband means slow uploads and downloads, which adversely affects productivity. Their connection may be too slow to support the use of such software.

Small businesses may have to rely on their fax machine because they are not able to download attachments quickly.

The Internet is crucial for digital marketing. Many small businesses need an online presence, and a broadband connection is the best way to maintain a website, keep up with social media, email marketing campaigns and promote their brand.

There are more than 2m home businesses in the UK, and many need broadband to contact customers or upload product photos to sites such as Amazon or eBay.

2. Not all students in the UK have equal access to information technology.

a) State **two** reasons why this might be the case.

No broadband, poor mobile coverage at school and/or at home.

Unable to afford a computer at home, or a suitable room in which to use the computer for homework.

Unable to afford software / latest versions of software.

b) Describe **one** way in which unequal access to information technology negatively affects students studying at school.

They may fall behind in many different subjects if they cannot access the Internet or use cloud computing (e.g. Google Docs). The school may not be able to offer Computer Science or IT as a subject.

c) Describe **one** way in which unequal access at school impacts students’ future prospects.

They may not have access to the same career opportunities, and it will be harder for them to access information online about university courses, jobs, apprenticeships etc., if they have no Internet connection or access to a computer.

Task 3

Lithium may soon be mined in Cornwall.

Research lithium mining in Cornwall to answer the following points:

a) How will they mine the lithium?

They will make use of satellites to find usable deposits of lithium. They will then extract lithium from the salt water. This will need to be pumped from wells which are 1km deep. Lithium is also mined by blasting solid rock and then processing it to extract the lithium.

b) What change in IT has created an increased demand for lithium?

Mobile technology and cars require battery power. Lithium is one of the best materials to store energy in a battery. An electric car will require around 60kg of lithium for the battery. Batteries can also be used to store power generated by renewable energy.

Task 4

“Information technology is bad for the environment.”

Discuss the reasons why this statement is both true and false.

Students should give reasons for and against this statement.

True:

The disposal of old devices is enormously problematic and damaging to the environment, using up landfill sites

Data centres around the world use huge amounts of energy, more than the entire electricity consumption of the UK. They have a similar carbon footprint as the airline industry. Just remember, saving all those photos in the Cloud that no one will ever look at again may be just as bad for the environment as leaving a light on or filling the kettle too full.

Mining for rare metals may destroy forests and poison the environment. Transport, packaging and assembling of IT equipment all contribute to global warming. Electric cars will add to the energy demand.

Many devices are disposed of before they are even broken. Even when a device doesn’t work, it is often made to not be easily repaired.

False:

One could say that most human activity is bad for the environment in some way or other. On the plus side, technology can lead to more energy efficient vehicles, power stations, homes and appliances.  
  
IT has allowed many people to work from home. This has reduced the need for daily commuting and many business flights. It also reduces the need for more business premises which would use a considerable number of natural resources.

Task 5

The WEEE directive is concerned with the disposal of electrical and electronic equipment.

Research the directive using the following site:  
https://www.gov.uk/electricalwaste-producer-supplier-responsibilities or other websites.

Explain **two** purposes of this directive and how these are achieved.

Purposes:

* Reduce the amount of waste electrical and electronic equipment that goes to landfill
* Improve product design so that it is easier to dismantle, recycle or reuse
* Create national WEEE collection points / processing systems

Achieved by:

* Accounting for items disposed of and reporting to a national enforcement authority
* Manufacturers meeting the cost of collection and processing of electrical waste
* Marking electrical/electronic waste with information so that the correct disposal is made
* Making information about the product to recycling facilities available so that products can be recycled