Pre BTEC IT Level 3 Extended Certificate workbook

Use this link : https://www.bbc.co.uk/bitesize/examspecs/zdjphbk

This will help you complete the workbook. This workbook will help you put IT in context, have the baseline required knowledge, and be ready to tackle the BTEC.

	Acronyms to KNOW
JPEG	Short for Joint Photographic Experts Group. Graphics File
CDROM	**C**ompact **D**isc-**R**ead-**O**nly **M**emory (Can't be written to)
DVD	Digital Versatile Disc or Digital Video Disc
EFT	Electronic Funds Transfer
GUI	Graphical User Interface. Uses graphics to make computer easier to use. eg WIMP
HTML	Hyper Text Markup Language
LAN	Local Area Network usually in one building, organisation owns all the wires & connections
MP3	audio storage
MP4	used to store digital video and digital audio streams
POS	Point of Sale (ie checkout)
RAM	Random Access Memory
ROM	Read Only Memory
VLE	Virtual Learning Environment, eg. Firefly
URL	Uniform Resource Locator, global address of documents & other resources on www
WAN	Wide Area Network (uses a public communication system (BT) to connect its parts)
EFTPOS	*Electronic Funds Transfer Point of Sale*
EPOS	Electronic Point Of Sale (or just POS)
CD-R	**C**ompact **D**isk-**R**ecordable (Written to once - read many times)
CD-RW	CD-ReWritable disk (Can keep saving to it)
WWW	World Wide Web

It would also be good to keep up to date with technology by reading tech blogs such as:

https://www.wired.com/

Youtube Channel:

https://www.youtube.com/user/Techquickie

BBC Click:

https://www.bbc.co.uk/programmes/b006m9ry

Basic IT components

1. Memory (N)

Task 1 - what do each of the following stand for:

ROM R_____ O_____ M_____

RAM R_____ A_____ M_____

Task 2 - choose the correct term for those shown in *italics*

ROM memory *cannot/can* be erased. **RAM** is *temporary/permanent* memory. When a computer is switched off any information stored in **RAM** is *saved/deleted*.

RAM is sometimes called **cache memory** – it helps a computer program work faster by storing the data closer that would otherwise be stored on the hard drive. Hard drives work more slowly than RAM. Data such as that you might using a word processor can be written onto and off the RAM memory really quickly. However, hard drives can store all your data and programs you ever need or could use at any one time. **RAM** is only capable of storing a limited amount of data and software. In addition, data written to the hard drive is saved on powering down, whereas anything stored on **RAM** is lost on powering down. For this reason RAM is also known as '**volatile**' memory.

Task 3 - complete this table

	RAM	**Hard drive**
On power down	All data is lost	
Memory size		Very large
Speed to write data	Extremely fast	
Volatile?		No

Task 4 - using a word processor on a computer that suddenly shuts down (or "**Why you need to save your work regularly**"). Put these steps in order.

	When you save, the new data file is saved on the **hard drive**
	Data in the **RAM** is lost – data saved to the hard drive is still there
	The computer shuts down whilst you are writing the document

	Start word processor – program called up from **hard drive**
	As you type the data is stored on the **RAM**
	Program stored on **RAM**

2. Starting up a computer

ROM memory chips are used to store tiny programs (called **BIOS** – basic input output software) that helps the computer to start up ("boot"). On powering up **BIOS** checks and connects whatever basic hardware is installed (mouse, monitor, keyboard) then loads the minimal operating system (DOS – disc operating system). This then loads the main operating system (Windows XP, or whatever is installed).

3. Operating systems

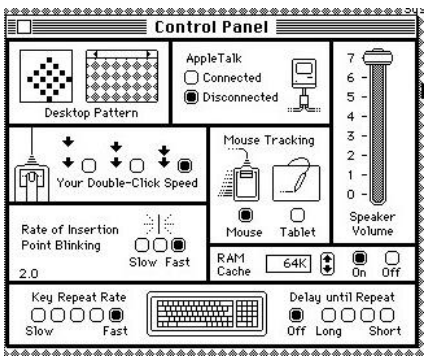
The operating system does what it says – it helps to operate (use) the computer system.

Task 5 – match the operating system task to an actual example actual (one has been done for you)

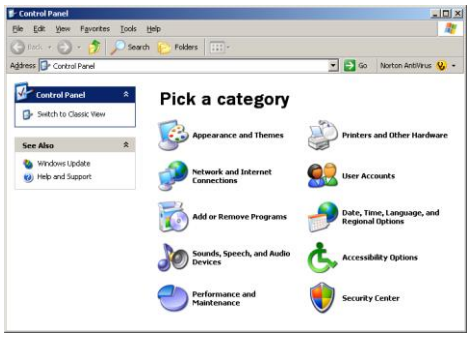
What the operating system can do	Actual examples
Control 'peripherals' such as the disk drives and printers	User name and password login
Control the transfer of data to peripherals such as printers	Saving files to hard drives, memory sticks, floppy disks
Allow the user to save files to a backing stores)	Click the MS Word button and MS Word is loaded from the hard drive
Issue simple error messages	Issue messages such as 'out of ink', disk is full
Maintain security and access rights of users	Check the printer is connected and working
Control the loading and running of programs	Press the print button and your documents is printed

4. GUI – graphical user interface

A GUI lets you interact with your computer using pITures and symbols in addition to entering typed text.



Early Apple GUI



Win XP GUI

Task 6 – on the list below, Say how each of the following uses of a **GUI** is helpful to someone who has not used a computer before

I. Windows……..

II. Icons…….....

III. Menus……

IV. Pointers ……

5. Inputs (**N**) (**D**) and outputs (**N**) (**D**)

A basic computer system might have input, output, communication and storage devices attached to it.

Task 7 – complete the table to say which is which

	Input	**Output**	**Storage**	**Communication**
Mouse				
Microphone				
Touch screen				
Network adaptor				
Monitor				
Hard disk			X	
Inkjet printer				
Keyboard				
Joystick				
Laser printer				
Speakers				
Modem				
Wireless adaptor				
DVD writer				
Camera				
LCD screen				
Infra-red port				
Scanner				
USB memory stick				
Touch pad				

6. Storage devices (**D**) (**N**)

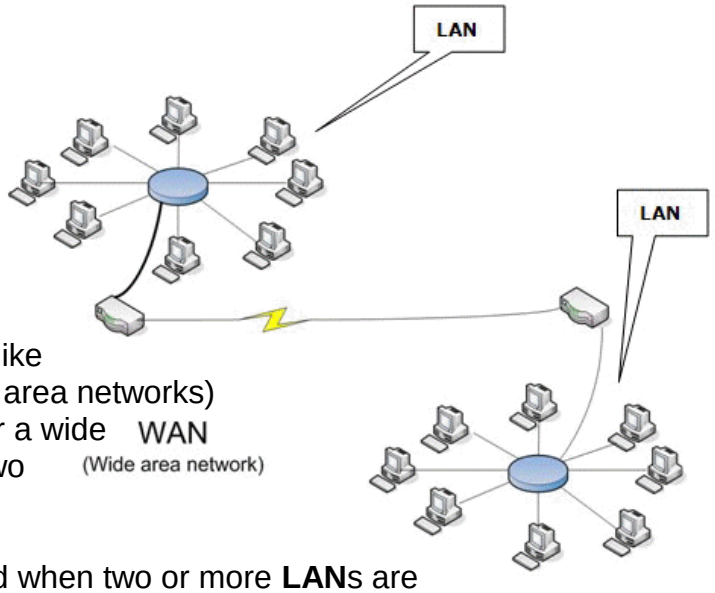
There is a wide variety of devices for storing data. Which one to use depends on:

- The amount of data you need to save
- If the date needs to be stored permanently or changed
- Whether the stored data needs to be portable

Task 10 – complete this table

Media	**Capacity**	**Portable (Y/N)**	**Uses**
DVD	8.4Gb		
CD	700Mb		
USB memory stick	1Gb plus		
Hard drive	200Gb plus		
Floppy disk	1.4Mb		
Memory cards/flash memory	1Gb plus		Digital cameras and mobile phones

1. LANs and WANs (N)



LANs are created when a series of computers are linked together much like they are at your school. **WAN**s (wide area networks) are formed when a network runs over a wide geographical area – typically when two or more **LAN**s are linked together.

A **WAN** (wide area network is created when two or more **LAN**s are connected together. This might be the case for a bank, where each branch might have a local network to share local files, but also be linked to other branches to share files or the central office for similar purposes.

Task 1 – tick whether each of the following is an **advantage or disadvantage** of using a LAN

	Advantage	**Disadvantage**
A user can access their work on any computer on the network		
A virus can spread more easily		
As data is shared there is a greater need for security		
Back-up of all data can take place automatically		
Cost of cabling can be expensive to buy and to install		
Damage to cables can isolate computers		
Data can be shared between users		
If the server fails, all the workstations are affected.		
Messages can be sent to people working at other computers		
Need to hire staff to run network		
Printing can be slow		
Software can be shared.		
There is control over access to programs and data.		
Workstations do not need their own printer		

Task 2 – a small business wants to link up it's shop and head office networks to create a WAN. Give one reason why **sharing** each of the following would be useful for the company:

i. Product details……
ii. Customer contacts……
iii. Sales figures……

2. Internet and intranets (N)

The **internet** is a type of **WAN** – millions of computers linked together to share information. An **intranet** uses the same technologies as the internet to help share information inside organisations. Your school probably has an **intranet** – it might have web pages with information on them, files to use in class and places to share work with others. Usually intranets cannot be accessed from outside the organisation without special passwords.

Task 3 – list four useful pieces of information your school intranet and internet sites have on them

Internet page
School newsletters

Intranet
Information on applying for work experience places

Task 4 – say **how** each of the following is an **advantage** to a school of having an intranet

No need to print out paper copies of worksheets	
Can change information quickly when it needs to be updated	
You can cut down the number of text books you have to buy	
You can put students work on the intranet for others to see	

3. The World Wide Web (WWW) (**N**)

The **world wide web** (**WWW** or '**the web**') is the information stored on the internet. If you use the BBC Bitesize web site for revision you are **using the internet** to access the **WWW**. The internet is the network of computers and the WWW is the information stored on that network of computers – *they are not the same thing*! The term URL is short for "Uniform Resource Locator" - it is the address of a resource on the Internet.

Task 5 – look at the following URL's and try to say what you might find there:

http://www.bbc.co.uk/schools/gcsebitesize/IT	
http://www.missionimpossible.com	
http://www.bathrugby.com	
http://www.manutd.com	

Once you have done this, go to the web pages and see if you were right

4. Browsers (N)

To access the **World WideWeb** you need a **web browser**. A **web browser** is a software program used to view and interact with various types of Internet resources available on the **World Wide Web**. **Chrome**, **Firefox** and **Edge** are common examples.

Web browsers are designed with tools to allow you to help you access the **World Wide Web** as easily as possible.

Task 6 – draw lines between the labels and the **web browser** features

Task 7 – explain how these features of a **web browser** make using the internet easier

Navigation (back/forward/home)	
Pop up blocker	
Auto-complete	
Favourites	
History	
Find/search	

5. **ISP's (internet service providers) (N)**

You cannot connect your home computer to the internet without using an internet service provider (ISP). An ISP is a company that provides access to the Internet to individuals or companies. ISPs provide local dial-up access from your personal computer to their computer network and their network connects you to the Internet.

You connect to the ISP's computer network

The ISP's computer network is connected to the internet

ISP's also provide other services such as email, web space and parental controls/filtering.

Task 8 – explain how the following services provided by an **ISP** might be used by home users

Email	
Spam blocking	
Web space	
Support and help	
Filtering/parental controls	
Weather/news	

6. Email (electronic mail) (N)

Email is electronic mail sent over the internet. Email is a mainly text based system that also allow images, animations and video to be incorporated into messages. As well as information in the message, information can also be attached to the message.

There are features of email that can be used to help users.

Task 9 – explain how the features of email might be used or make using email easier

BCC	
CC	

Address book	
Attachment	
Encryption	
Subject line	
Inbox	

Task 10 - the stages in sending and receiving an email are shown below. Add numbers to show the correct sequence (first and last steps are labelled)

1	sender clicks send in email program	..	receiver uses email program to check their mail	..	converted into signal suitable for telephone system
..	Message waits for someone to access it	..	messages downloaded from server to computer via	..	arrives at host e mail 'server
..	goes to modem	..	message put into form to send electronically	9	modem decodes the telephone signal into computer data and read

7. Facsimile (FAX) (N)

A facsimile is a copy of a document that is scanned and sent over the telephone connection. A received FAX is a black and white document that shows the senders phone number and time it was sent. FAX messages are very different to email messages.

Task 11 – tick the box to show which statement matches which method

	FAX	Email
Can be sent in colour or b/w		
Might have files attached to it		
Might contain computer viruses		
Can attach files to message		
Encryption of message		
Arrives at destination as soon		

as it is sent		
Requires an ISP		

8. Tele/videoconferencing

Video conferencing can be done very cheaply at home – all you need is a camera, speakers (or headphones), a microphone, conferencing software (E.G zoom, teams etc.) and a connection to the internet.

Businesses use video conferencing as a costs effective, on-demand way top get people together – sometimes on other parts of the world. You can have voice and video meetings, share files (such as PPTs) and share virtual whiteboards (for example to work on a design together).

Task 12 – tick boxes to say of the following aspects of using videoconferencing are good, bad or neither

	C	F	D
Travel expenses are saved			
Time zones can mean having to use system at odd times in the day			
keep in touch if you will, with the world at large			
More people are easily accessed and contacted			
Information and knowledge are often passed on at more rapid rates			
Need expensive equipment			
Take classes at distant locations that would normally be unavailable			
Accommodate busy schedules			
Need to train staff to use it			
Can stimulate better brainstorming, knowledge sharing and information gathering			
Improved knowledge sharing and information gathering			
Contact new clients regardless of their location			
More personal than a phone call			
No physical contact between people			

9. Digital imaging technologies (N)

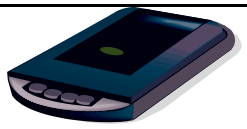
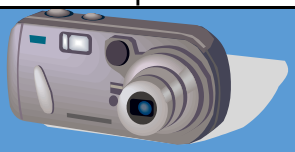
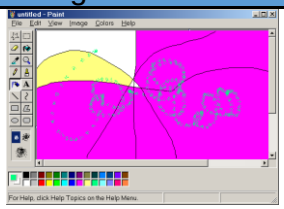
There are three main ways to capture images:

- Creating them using digital cameras, scanners or art packages
- Using an existing one (clipart or images taken from web sites)

Task 13 - complete this table to show which applies to which method (one has been done for you):

	Art package	Scanner	Digital camera	Clipart	Internet
You get exactly what you want					
There are copyright issues					
You need expensive equipment		x	x		
It takes a lot of time					
The software is hard to use					
You can use existing images					
It is realistic looking					
The range of possibilities are endless					

Task 14 – match the image to the description (one has been done)

Used to take photographs	 Scanner
Collection of (usually copyright) images created using an art package	 Clip art
Used to scan an image into a computer	 Digital camera
Used to locate images	 Art package
Used to create images from scratch	 Internet

Applications of IT

A. Electronic Monetary Processing

1. Electronic Funds Transfer (EFT) (N)

EFT is simply automated electronic transfers between bank accounts. Since almost everyone has a bank account, it is the most commonly used method of payment other than using cash.

Collecting money

EFT can be used for collecting money from customers – by a system called **Direct Debit**. Quite often regular payments which have to be made, for example, mortgage payments, rent and electricity payments. The Direct Debit system allows a customer to give permission to businesses who are owed money to ask the customers bank for regular payments.

Paying money

EFT can be used to pay bills by paying the money owed directly into the creditor's bank account. Wages can be paid directly into employees bank accounts from the companies bank.

Task 1 – complete this table to show who the example is an advantage or disadvantage for

Example	Customer		Business	
	adv	dis	adv	dis
The customer does not have to carry any large sums of money.				
It is easier for the business to deal with changes in amounts.				
There is usually a minimum spend when using a debit card				
If the amounts change (e.g. increase in mortgage payments) the customer does not have to do anything, therefore saving him time.				
To make use of the system the customer will have to open a bank account				
It is a more secure way of making or receiving payments				
The customer does not have to remember to pay regular amount such as insurance premiums, as these are collected from the customer's bank automatically				
Costs are less than with traditional systems				
Tracking of payments is easier				

2. Point of Sale (POS or EFTPOS) (N)

Electronic cash registers (tills) that are connected to the retailer's main computer using a local area network housed in the same building and also to banks over wide area networks. The retailer's main computer stores the stock control database. This database also provides the electronic cash registers with information about each product (name, price). It also stores information about all the goods which have been bought by customers. The process start when the check out staff scans the bar codes. The bar codes hold information such as country of origin, manufacturer and product code.

Task 2 – number the following steps in the correct order to show how a POS/EFTPOS works

1	Checkout staff scan barcodes with bar code reader
	Total due displayed on checkout screen
	If debit card used the card is checked, an authorisation code issued and the amount is debited form account via EFT
	Barcode information is looked up in the database to find description and price
	if cash the till calculates the change due based on the cash the customer passes over

	Quantity sold is removed from stock level record
	Payment types entered (cash/card)
	Description and rice displayed on checkout screen
	When sales complete register calculates total bill including multi-buy specials
10	Cash register prints sales invoice including good bought, time and date, total paid, store details

3. ATM

ATM’s (automated teller machines) provide a range of banking services to customers. To use them you need either a swipe card (magnetic strip) or smartcard (chip) and a PIN (Personal Identification Number). Services available at ATM’s include:

- Cash dispensing (local and worldwide)
- Balance enquiries
- Cash/cheque deposits
- Mobile top ups
- Mini statement printed/on screen
- Pay bill
- Access up to date account information

- Request full (postal) statements

ATM's are a target for criminals, from simply hanging around to rob users as they retrieve their cash, to more sophisticated skimming (attaching card readers and micro cameras to record card details as they are used). To secure these systems banks:

- Banks place video surveillance equipment near ATM's
- Place ATM's in busy, well lit areas rather than back streets
- Place ATM's behind a set of bank doors only accessible by a swipe card

Chip and pin cards were introduced to combat the increase in card fraud. Chip and PIN cards securely store your personal details (bank code, account number, signature, expiry date, date of issue) onto your card's chip where previously this information was stored on a magnetic strip on the reverse of the card (which can be easily hacked with fairly simple equipment).

Task 3 – draw lines between the labels and the correct part of this chip and pin card

Task 4 – give three advantages of using credit cards to make payments

a) ……

b) ……

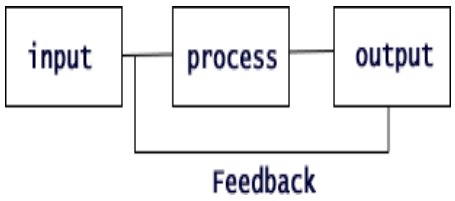
c) ……

4. Input, process and output (N)

Input devices that measure quantities such as sound light and temperature are known as **sensors**. There are two types of control system - open loop and closed loop. An open loop control system is very simple.

In this case a single input results in a single output. A good example of this type of control system would be when you turn the lights on in a room. The light switch (input) is pressed, electricity flows to the bulb (process) and the light is supplied to the room (output).

A closed loop system is slightly more sophisticated as a closed loop system introduces the concept of feedback.



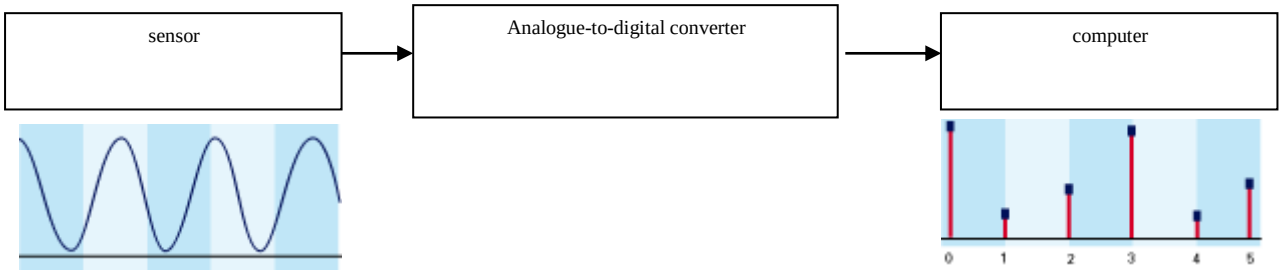
Feedback describes the continual monitoring of a control system by sensors, this monitoring results in changes in the output. The best example of this is a heating thermostat. When you put the heating on in your home the system will use a temperature sensor to continually monitor the environment. The sensor sends feedback to the system, if the temperature is too high the control system reduces the heat output, if it gets too cold the system increases the heat output etc.

Task 5 - for each of the sensors below, draw a line to BEST the way it could be used by a company (one has been done for you)

thermostats or thermistors	In winter, make the heating come on before they open for business to make sure it is warm when employees start work.
pressure switches	Detect fire or help monitor the temperature fridges, freezers, ovens and air conditioning systems
timers	Set off an alarm if someone enters the building at night from any entrance
Movement detectors	Warn a sales advisor that someone has stepped into the shop

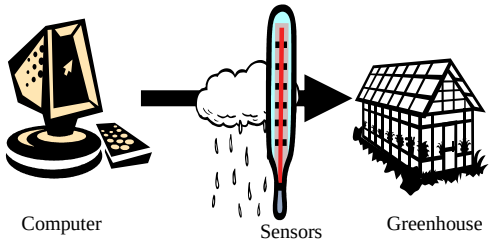
5. ADC's (analogue to digital converters) (N)

Data used in computer control systems must be 'digital' – consist only of 0's and 1's. Therefore, an **interface box** is needed to convert the data from the sensors into computer data. Data such as pressure, light and temperature is **analogue** data. Computers can only work with **digital** data. An **ADC** (**analogue to digital converter**) converts analogue data from the sensors into digital data.

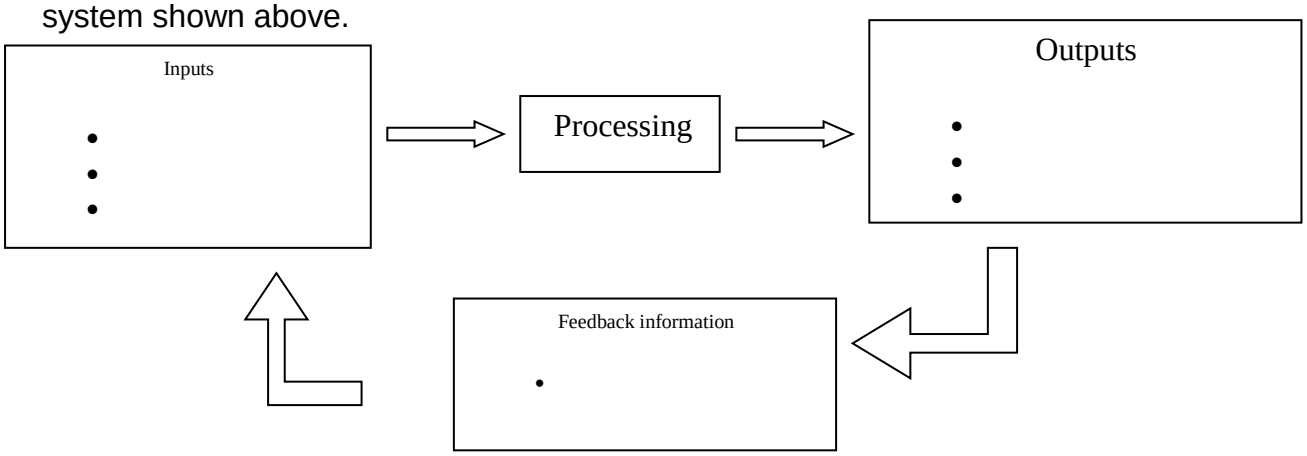


6. Greenhouse control (N)

Look at the diagram below of a greenhouse used by a company producing tomatoes – the sprinklers, window opening motors and heaters are all controlled by a computer system which uses feedback.



Task 6 - complete the diagram below to show the parts of the feedback system shown above.



7. Traffic control (N)

Traffic is controlled by:

a) Timers - lights switch from green to red over timed intervals

b) Sensors under the road – loops detect metal vehicles approaching lights and switch them to green

c) Ticket readers - in car parks they read tickets and open barriers is ticket has been paid

d) Light sensors - car park barriers use sensors to detect when a vehicle has passed by and it is safe to close the barrier

e) Licence plate readers – in controlled zones in cities (such as the London ‘congestion charge’) you have to pay to enter the controlled

zone. Optical devices ‘read’ number plates to check if the vehicle is permitted to enter.

Computer based control systems have several advantages including:

- Computers can respond instantly to changes.
- Systems can be running 24 hours a day, 365 days a year.
- Control systems can operate in places that humans would find dangerous or awkward.
- Outputs are consistent and error free.
- Computers can process data quickly and machines can operate faster than humans.

Task 7 – complete this table to show the processing that takes place in, and the advantages of, the systems above

System	*Processing*	*Advantages*
a) Timers		
b) Road sensors		
c) Ticket readers		
d) Light sensors		
e) Licence plate readers	Checking vehicle has paid to enter	No staff required, can control large numbers of vehicles easily

C On-line services

10. Shopping (N)

It is possible to buy many products ‘on line’ that you can get in the local shops. ‘Internet shopping’, as it is called, has advantages and disadvantages.

Task 10 – add X’s to the table below to show which is which (one has been done for you):

	Advantage			Disadvantage		
	Shops	Customers	Staff in shops	Shops	Customers	Staff in shops
You can compare prices easily		x		x		
Goods can be delivered to your door						
You don’t need to staff large shops						
Local shops might close due to lack of business						
It is difficult to return items bought on line						
There is no person you talk to when you buy						
You can’t handle the goods before buying						
Web sites need specialists to make and run them						
Web sites can sell a much larger range of goods						
PITures on websites might not show the goods well						
Payments are made through a ‘secure system’						
You need a credit card to buy goods						

11. Banking (N)

On line banking is increasingly taking over the use of high street banks. Although you can't withdraw and pay in cash or cheques, other services are offered.

Task 11 – visits each website below and see if they offer the services shown

	www.barclays.com	www.nationwide.co.uk	www.natwest.com
you can view up-to-the-minute balances			
you can view up-to-the-minute statements			
pay bills			
make payments			
move money between most of your accounts and into other's accounts (if given their details)			
no extra charge			

12. Reservations (N)

Booking a holiday or making travel arrangements is reducing the need to visit travel agents and ticket offices. Arrangements include:

- Buying air/train/bus tickets
- Checking departure/arrival times
- Booking hotel rooms
- Booking visits/trips (e.g. to theme parks)

In addition, you can also use on-line travel services such as

- Forums to gather alternative information about destinations

- Checking health requirements (e.g. immunizations)
- Viewing ‘virtual tours’ of hotels, resorts or facilities
- Reading reviews on travel web sites

Task 12 -visit these web pages below and list three useful pieces of information available for travellers to help them plan a trip

www.timeout.com	www.trainline.com	www.ryanair.com

13. Virtual reality (**N**)

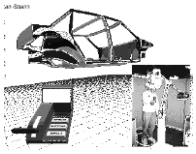
Virtual reality is a computer simulation of a real 3-dimensional world, sometimes with sound effects. Virtual reality sometimes involves wearing a body suit and head gear that includes an internal screen. The suit measures your body's movements and displays them on the screen. These computerised images can be simulated in any environment making you feel like you're really there.

Games are often played in virtual reality environments – they don’t exist, they are just created and displayed digitally.

Task 13 – match the image to the examples of VR systems

Exploring human organs – possibly to attempt or develop new surgical methods	Creating virtual design to allow designers to explore digital versions of potential products such as cars.	Exploring complicated chemical molecules to try and understand it more	Allowing 'gamers' to explore digital worlds or to interact (fight?) with opponents






14. Computer simulations (N)

Computer simulations are usually mathematical models tat can be used to simulate situations where mathematical formulae can describe those situations. They are used in a wide variety of practical contexts. However, these systems involve enormous computing power to simulate the various aspects of flight that a pilot would need to handle.

Task 14 – match the simulations below to the data inputs to the simulation

Simulation	*Inputs to the computer simulation*
Analysis of air pollutant dispersion using atmospheric dispersion modelling	Mobility of population, population, age, temperature
Simulating spread of a disease such as bird flu	Landform, wind speed, moisture content, cloud cover, sea/land/air temp
Design of Noise barriers to effect roadway noise mitigation	Wind speed, air temperature, landforms
Flight simulators to train pilots	Noise levels over time, sound absorption levels for different materials
Weather forecasting	Wind speed, light level, air speed, position of wind controls, engine speed

Implications of IT for individuals, organisations and society

B Employment

5. Pattern of work (N)

The use of IT has changed the places and the times that people work.

Task 6 – complete this table to show the possible changes the introduction of the IT described might have

Use of IT	*Likely impact on time and/or place of work*
Mobile phones given to staff who travel a lot	
Laptops provided to people who commute by train	
Automated factories able to work 24/7	
Digital camera and mobile phone link provided for press photographer	
Internet grocery ordering and home delivery service	
Employee in 24 hour call centre	

8. Teleworking (N)

More and more people are using IT to work in places other than the traditional office. Teleworkers (people who use telecommunications – FAX, email, internet, mobile phones - to maintain contact with their offices) have different work patterns to those who wok only in an office. Differences include:

- Place of work – you can work anywhere – home, office, on the way to/from the office, on holiday
- Time of work – you can work anytime you want – this can increase job satisfaction

- Office – less space, furniture and equipment is needed for workers – this can save the company money.
- Equipment – workers need mobile devices (laptops, PDAs, mobile phones) and connections (broadband, 3G cards or link to office LAN) and devices (web cams). This can be expensive but can also improve the workers job satisfaction when provided with such equipment. Training is often required to use the equipment. Workers save commuting costs.
- Teamwork – teleworkers sometimes miss face to face meetings. Managing teleworkers can be difficult. Some people lack the motivation to manage their time at home. These issues can affect the productivity of teleworkers.
- Home/office divide – teleworkers sometimes have difficulty separating work and home; some find they gain more family time by not having to commute

Task 10 – try this assessment of whether someone could telework only, telework occasionally or never telework to do their job

Example of job	Never telework	Telework only	Mixture of telework and office work
Rarely **requires face-to-face** interaction in the office with others to do job effectively			
Occasional need to coordinate and participate in **quick reaction and turnaround tasks**			
Weekly need **physical access** to special office resources (such as copying equipment, large machines, special files, etc.)			
Daily access required to information that must be **strITly protected**. That information requires **physical security precautions** (such as access to special or locked files, or other forms of physical, non-electronic protection **in the office**)			

C Home and leisure

10. IT and the music industry (N)

IT is having an enormous impact on the music industry – artists, recording studios, record labels, music stores and the customers/music fans.

The use of the Internet for buying, selling and listening to music, websites for display of public relations information, and the use of digital technology for recording and duplicating music, adds to the variety of ways in which music products can be sold. Most of all, IT and digital tools give easier access to the creation of music by a broader range of users.

MP3 – a file format the allows CDs to be reduced from typically 5-700Mb to less than 100Mb and still retain the quality. This means to main things - a lot of music can be stored on portable devices ('MP3 players') or transferred over the internet in a fairly short space of time (downloaded).

Digital recording – using a standard laptop or PC it is possible to create music tracks – form scratch or by sampling other music stored digitally on the computer. Digital recording means there is no need for instruments at all since 'synthesizers' can reproduce almost any instrument. In addition it is possible to fix recordings by removing or changing bad notes or enhancing a poor vocal track using effects.

Advertising and distribution of music is a massive part of computer use, the WWW and the internet – from on line radio stations, record labels, artist's sites, music sales sites, peer to peer file transfer (downloading), CD copying, converting CD to MP3. Some of these a re good for different parts of the industry, others have a bad effect.

Task 12 – think about the affect the following aspects might have on the different groups shown below. Decide if there is a bad (D), good (C) or no (F) effect on each group.

	Record labels	*Artists*	*Recording studios*	*Consumers or fans*
Downloading music	D F C	D F C	D F C	D F C
Music web sites	D F C	D F C	D F C	D F C
Music shopping sites	D F C	D F C	D F C	D F C
CD copying	D F C	D F C	D F C	D F C
Converting CD's to MP3	D F C	D F C	D F C	D F C
On line radio stations	D F C	D F C	D F C	D F C
MP3 players	D F C	D F C	D F C	D F C

For one of the above, explain your choice for each of the four groups:

MIDI (Musical Instrument Digital Interface) is a standard enables electronic instruments such as synthesizers, samplers, sequencers, and drum machines from any manufacturer to communicate with one another and with computers. MIDI files are another type of music file. However, MDI files are tiny as they are just a set of instructions to tell the computer how to reproduce the track (not the track itself). This format can be used on mobile phones as they are small files.

Sounds can be played directly or sent via digital processors to enhance them or apply special effects such as reproducing the way the sound might be heard in a stadium or concert hall. Sounds can also be converted to ringbones using special editing software.

11. IT and the games industry

PC and consoles games (Playstation, Nintendo, Xbox, on-line gaming) are a massive area of spending by consumers.

Task 13 – find out which type of game the following are

	Sports	Role player	Third person shooter	First person shooter	Adventure
SuperMario					
The SIMS					
Flight simulator					
Gran Tourismo					
Doom					
Oblivion					
Space Invaders					
NBA					
FIFA					

Games are supplied in different formats

- CD – for simpler PC or console games (sometimes high level games are supplied on a number of CD's
- DVD – for games involving a lot of graphics, sound and video – these replace multi-CD games, but can only be used if the console can use DVDs.
- Cartridge – for basic games using little graphics (often 2D or limited 3D)
- BlueRay/HD DVD – this media has a much larger capacity (at least 5 x DVD) allowing much larger use of graphics and video to a much higher resolution

Task 14 – draw a line between the console feature and how it might be used

'Rumbling' hand controls	*How this feature might be used*
DVD player	Allows user to connect wirelessly to the internet or other games machines
camera input	Allows user to use interactive games using a camera or video conference.
Internet connection	Can use console to play MP3 music files
MP3 compatible	Can update games on-line, on-line game, use email
WiFi	Can view game on console without need for monitor/TV
Built in colour screen	Feedback form hand set when using shooting games
	Can play DVD movies

Three main laws are required for the short course

Task 18 - draw a line between the Law and its description – one has been done for you.

1998 Data Protection Act	Ensures that the copyright of people is not abused. Includes musicians, film makers and images people have produced as well as writing they have done. Software, films, games, artwork, and text are all covered.
1990 Computer Misuse Act	Protects people form having their personal data held, changed or distributed without their permission. Ensures companies hold data securely. RestrITs the type of data that can be held to ensure privacy.
1998 Copyright, Designs and Patents Act	Helps to protect the company from someone hacking into their computer system and making changes to the system such as changing or deleting files – sometimes by use of 'viruses' (software programs that change the way a computer works or data held in a computer.

Task 19 – unscramble these paragraphs by choosing the correct word from those shown in ***italics***:

A computer virus is a ***software/hardware*** program that ***stops/causes*** damage either by ***saving/deleting*** or ***corrupting/mending*** files, or by interfering with computer operations by ***halving/reproducing*** itself to fill up the computer's ***memory/scree****n*.

A computer hacker is someone who ***breaks/is invited*** into systems, *destroys/saves* data, ***gives/steals copyrighted/copyright*** *free* software, and performs other ***destructive/harmless*** or ***legal/illegal*** acts with computers and networks. Hackers ***might/never*** use viruses to change computer systems.

Copyright is the ***legal/illegal*** protection given to ***authors/users*** which protects them against ***unauthorised/authorised*** copying of their work.

The **data protection act** covers the use of living people's personal data (e.g. name) or sensitive personal data (e.g. religion)

Task 20 – complete the table to show what personal data is and what is sensitive personal data is

	Personal data	*Sensitive personal data*
Name		
Address		
Medical details		
Banking details		
Racial or ethnic origin		
Political opinions		
Religion		
Membership of a trade union		
Health		
Sexual life		
Criminal activity		

The data protection act include eight very important principles to protect data subjects (the people whose data is being used) from data controllers (the people to who collect or hold the data).

Task 21 – draw a line between the eight principles and the example shown (one has been done)

Principle	*Example*
Processed fairly and lawfully	Data cannot be processed if it causes distress or is used for direct marketing.
Used for the lawful purpose it was collected for	This includes keeping the information backed up and away from any unauthorised access. It would be wrong to leave personal data open to be viewed by just anyone.
Adequate and relevant to purpose collected for	If a non-EEC country has a suitable data protection law data can be sent there.
kept accurate and up-to-date	It is alright to keep information for certain lengths of time but not indefinitely. This rule means that it would be wrong to keep information about past customers longer than a few years at most.
kept no longer than necessary	There is a duty to keep it up to date, for example to change an address when people move.
Processed within the rights of the data subjects	So you must have enough detail but not too much for the job that you are doing with the data.
kept secure	You cannot give it away or sell it unless you said you would to begin with.
kept only within the EEC	For example financial data cannot be used to steal from someone's account