Task 1

What is meant by cloud computing and how is it different to cloud storage?

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| Cloud computing requires higher processing power than cloud storage. Cloud storage, on the other hand, needs more storage space. Cloud storage is simply a data storage and sharing medium, while cloud computing gives you the ability to remotely work on and transform data (for example, coding an application remotely). |

Identify the advantages and disadvantages to using cloud computing.

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| **Advantages** | **Disadvantages** |
| * Lower setup costs * Dynamically add more capacity as the system grows. * Compatibility issues are reduced. * Documents and files can be accessed from anywhere that has an Internet connection. * Collaborative working * Reliability * All software automatically upgraded. * All data backed up remotely at another site. | * An Internet connection is required to create, edit save and retrieve files. * Downtime can also be a disadvantage – if the * cloud providers are having technical issues, the service cannot be accessed. * Security can be an issue as data stored in the cloud can be vulnerable to hacking. * The cloud version of software is not always the most up to date. |

Task 2

Identify one advantage and disadvantage to using each method of communication shown in the table below.

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| **Rank** | **Method of communication** | **Advantage** | **Disadvantage** |
|  | Ethernet | **Speed** offered by an ethernet connection is much greater compared to a wireless connection.  An ethernet connection has higher levels of **security**. With an ethernet connection, you always have the control over who is using the network.  Ethernet connections are **reliable.** This is because there are no interruptions from the radio frequencies.  **Efficient** as they don’t consume as much power. | **Mobility. T**here are more physical limitations in ethernet. Unlike in a Wi-Fi connection, you cannot roam freely when connected through ethernet.  **Difficult to expand** as more cabling required along with additional hardware such as routers and switches.  **Harder to install** without a professional's assistance. Especially the areas where they need to pass walls and multiple floors.  **Connectivity**. Using a single ethernet connection you can only connect to one particular computer. If you need more connections, more cables have to be used. |
|  | Wi-Fi | **Convenience**. The wireless nature of such networks allows users to access network resources from nearly any convenient location.  **Mobility**. Users can access an internet connection without being restricted by cables, as long as they’re in sufficient distance of the router.  **Easy to set up/expand.** No need for additional cables or to purchase additional hardware, apart from WAP if coverage needs to be extended. | **Security**. Weaker in comparison to cabling methods like ethernet.  **Limited range**. Wi-Fi can only cover a certain distance until the signal is lost. This may mean additional hardware is required such as Wireless Access Points or Wi-Fi extenders/boosters.  **Speed**. Transmission speed is slower than traditional cabling methods such as ethernet. |
|  | Bluetooth | **Wireless**. It does not require any form of wires for it to transmit data.  **Availability.** An exclusive feature available in most devices such as smart phones and tablets.  **Usability**. For Bluetooth pairing, all you have to do is turn on Bluetooth on both of the devices and make them discoverable. As long as they are in the coverage range, the devices will be connected instantly.  **Efficient** due to its lower power consumption. | **Slow speed**. In general Bluetooth 3.0 and Bluetooth 4.0 has the transmission rate of 25Mbps.  **Limited range.** Maximum range offered by a Bluetooth connection is of 100m.  **Security**. It uses radio frequencies which makes it easier to intercept. |
|  | Fibre optic cable | **Connection Quality.** Fibre optics are resistant to electromagnetic interference and have a low rate of bit error.  **Scalability.** Fibre optics are more scalable, as it’s simple to install new equipment.  **Security.** Fibre optics do not radiate signals, so there is no way to listen in on the transmissions passing through  **Distance.** It can transmit data over longer distances because there is no risk of electromagnetic interference. | **Physical Damage.** Fibre is thinner and lighter than metallic wiring, so it makes for a more delicate system. Because fibre optic cables are small, they can be easily cut by accident during building renovations or rewiring.  **Cost.** Can cost a lot of money to install because of the need for specialist equipment and specialist fitters to install it.  **Fibre fuse**. This occurs when too much light meets with an imperfection in the fibre. This occurrence can destroy long lengths of cable in a short amount of time. |
|  | Mobile communications | Wireless internet connection  Does not require a router or WiFi to connect to the internet  Range is limitless  Better privacy protection | Wireless internet connection only for mobile devices  Using international data plans can get expensive  Unless you have an unlimited data plan, you have to keep track of how much data you use  Need a mobile phone tariff that includes cellular data to use  Must be in range of a cell phone tower to access the internet |
|  | Satellite | **Coverage.** The signal from satellite can cover large geographic areas.  **Cost.** In terms of coverage, it can work out cheaper than setting up a network using fibre optic connections. | **Latency.** Satellite communication can lead to time delays when signals are transmitted.  **Interference**. Satellites require on line of sight with receivers. The quality of the satellite signals received can be adversely affected by several factors, including the weather (especially heavy rain), obstructions (such as trees and leaves), or whether the satellite dish (receiver) is correctly angled to receive the signal.  **Speed**. Average download speed is much slower in comparison to other available methods. |
|  | Broadband | Based on FTTC (Fibre to the cabinet)  **Easier to set up** because a street cabinet can be used to add additional connections without the need to dig up any roads.  This makes it **cheaper to install** and more accessible for home users. | Based on FTTC (Fibre to the cabinet)  It can use **inefficient** copper wire and speeds are far lower than full fibre connections.  Some responses might refer to FTTP (Fibre to the premises) |
|  | GIS | GIS is a geographical information system. It is a software tool that is available to geographers to aid mapping and spatial analysis of data and information. It enables data to be plotted and interrogated digitally in map form.  Lots of information can be viewed **on one page.**  Information can be **linked together** to identify patterns/trends.  Lots of people have **access to GIS (i-phones).**  GPS combined with GIS has made **travelling between places** easier. | It may require **expensive software** and a computer which needs constantly updated.  Complicated software may **require training to use.**  If there **are too many layers**\* it may become difficult to interpret.  GIS produces the maps but we still have to **interpret them.**  \* GIS enables large amounts of data to be shown on one map. Each data set represents a different layer which is placed over a map. The different layers can be switched on and off as required to add further detail to a map. |