

Task 1

(a) Ad-hoc networks are commonly used in PANs. What does PAN stand for?

Personal Area Network

(b) Wireless ad-hoc networks are commonly used when connecting your smartphone to a laptop. Identify three reasons why we might connect our smartphone to our laptop.

1. To make use of the smartphone's mobile broadband, known as "tethering".
2. To transfer files, such as photos, to the laptop so we can edit them with graphics editing software.
3. To sync calendar items and emails between your smartphone and laptop.

(c) The alternative to an ad-hoc network, is an "infrastructure" network where we connect via a central device like a router. Generally speaking, an Ad-Hoc network is cheaper to set up than an Infrastructure network. Why is this?

The main reason is because we don't need to buy a central access point (e.g. router) to connect the devices to. These can be expensive to purchase. It is also easier to set up and this can save us money we might need to spend on technical support.

Task 2

(a) Below are four statements regarding Open Wi-Fi connections. Identify which statements are true and which are false.

	True	False
1. Open Wi-Fi is where you connect your laptop to your phone to share its connection.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Open Wi-Fi doesn't require a password in order to connect to it.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Open Wi-Fi encrypts all data that is being transmitted over it.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Any data being sent over Open Wi-Fi could be intercepted & stolen.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(b) Open Wi-Fi is commonly used in restaurants and cafés. Why do you believe they use this?

Restaurants and cafés use open Wi-Fi because it is much quicker and easier for customers to connect to. If there was a password then they would need to share this with customers, and some customers may not know how to enter the password.

(c) Secure Wi-Fi connections usually use encryption. What type of encryption is used on Wi-Fi?

WEP was the first type of encryption and was followed by WAP. Now we should use WPA2 as it is the most secure.

Task 3

There are a number of performance issues with ad-hoc networks. Explain these issues below.

Issue	Explanation
Maximum Speed	Ad-hoc networks only support slower data transfer speeds than infrastructure networks.
Maximum Range	Ad-hoc networks don't have the large, high-powered antennas that routers do and so can't have the same connection range.
Interference	Because devices need to directly communicate, when you add several devices to the network there will be a lot of crossing signals that will interfere with each other.

Task 4

Samuel commutes by train a lot as part of his job. While on the train he tethers his laptop to his smartphone in order to use its mobile broadband. However, at times he finds he loses his internet connection.

Explain two potential issues that might be the cause for Samuel's loss of internet.

1. Samuel may find he is passing through areas that have poor mobile network coverage. For example, more rural areas which won't have as good network infrastructure as in the city.
2. He may also find that he is passing through areas that have their signal blocked, known as blackspots. A common example of this that might be affecting him is when passing through tunnels.