1.
Mobile Network
- Pros: Gives you access to the internet almost anywhere
- Cons: Its an expensive and unreliable in remote areas

Home/residential
- Pros: Cheaper option than a mobile connection
- Cons: You can only use the internet in the confinements of your home, sometimes unreliable due to provider issues. Often have to share the connection with other household members

Enterprise/Institutional
- Pros: Allow you to access high speed internet at places such as university to use for coursework. Normally reliable as it is monitor by it professionals
- Cons: Can be slow due to high traffic

2.
The first message ever sent on the internet was 'LO' in 1969. The reason was the network crashed after the first two letters while trying to type LOG to connect to the other system

3.

Application	Provides function needed by users
Transport	Provides end-to-end delivery
Network	Sends packets over multiple links
Data Link	Sends frames of information over a link
Physical	Sends bits as signals

4.
Reason 1: Each layer is explicitly structured to handle certain task for modularisation

Reason 2: Easy to update and maintain the systems as modifying a layer will not effect the rest of the system causing any failures if the way the layers interact simply stays the same

Disadvantages: multiple layers have to process the data and add headers to it which can be costly

5.
The hidden terminal problem occurs when two nodes are hidden from each other and both try to communicate with another receiver e.g. A doesn't know that C is also communicating with B because the range is to short to communicate with C. This causes a collision at B

6.
The exposed terminal problem occurs when a node is prevented from communicating with another nodes due to transmissions from a neighbouring node e.g. C waits to communicate with D because it can tell be is communicating B

7.
Carrier Sense Multiple Access (CSMA) is similar to "taking turns". It improves on ALOHA by sensing if another node is sending data, it then doesn't send and waits. It then can either send as soon as idle (greedy approach), wait a random time then tries again (Non-persistent) or uses a set probability for persistent

8.A.

1	0	1	0	P1=0
0	1	1	1	P2=1
0	1	0	1	P3=0
1	0	0	1	P4=0
Q1=0	Q2=0	Q3=0	Q4=1	

B.

1	1	1	0	P1=0
0	1	1	1	P2=1
0	1	0	1	P3=0
1	0	0	1	P4=0
Q1=0	Q2=0	Q3=0	Q4=1	

A single bit error on row 1 col 2 can be detected and correct as the parity of P1 and Q1 are now incorrect so we know what row and column is incorrect

C.

1	1	1	1	P1=0
0	1	1	1	P2=1
0	1	0	1	P3=0
1	0	0	1	P4=0
Q1=0	Q2=0	Q3=0	Q4=1	

A double bit error in row 1 column 2 and 4 is detected as incorrect by parity Q2 and Q4 but P1 is still correct so the row is unknown thus cannot be corrected