**Networking Questions (Use slideshows 11a, 11b and 11c to help you)**

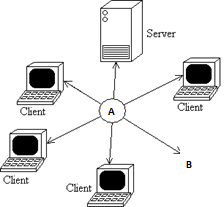
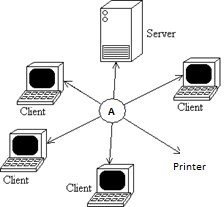
**A small start-up business is thinking about setting up a computer network.**

1. State 4 reasons why this would be a good idea.
2. State and explain one thing that they would need to be careful of/think about.

**A network engineer has recommended they go for a client-server model.**

1. State 2 reasons why this would be a good option.
2. State 2 reasons why they might go for a peer-to-peer network instead.
3. On a client-server network, how does the hardware of a server typically differ from the hardware of a client?
4. On a client-server network, what role do servers play?

**The business will be based in two buildings on an industrial site. The buildings are about 50m apart. The engineer has said that he would set up a LAN, using a star-bus topology, for them and has started to draw a sketch.**



Building 1

Building 2

1. What does LAN stand for? What is the definition of a LAN?
2. What does “topology” mean?
3. What kind of devices are labelled “A”? What do they do?
4. What kind of device (labelled “B”) would allow connection to the internet?
5. Finish the sketch showing the connection between the two network segments.
6. The engineer has suggested that this connection be fibre optic rather than copper. Give one advantage and one disadvantage to this.

**Someone has mentioned that too much network traffic can be a problem on some kinds of topologies.**

1. Which devices to be used in the proposed network limit network traffic? How do they do this?

**On a network, data is sent from one place to another as packets.**

1. What is a packet? What is a packet typically made up from?

**The proposed network will run on the TCP/IP protocol suite and every device on the network will need a unique IP address.**

1. What does ***TCP/IP*** stand for?
2. What is a ***protocol***? What is meant by a ***protocol suite***?
3. Name two other common protocols that are part of the TCP/IP suite.
4. What is the purpose of an IP address?

**The engineer has jotted down some IP addresses to use but has made some careless mistakes with some of them.**

**192.168.3.257 192.168.3 192.168.3.8.89 192.168.3.254**

1. Identify the invalid IP addresses and say what is incorrect about them.

**Any device connected to a network is connected via a NIC, and every NIC has a MAC address.**

1. What is a NIC?
2. What is a MAC address and how do they differ from an IP address?

**Someone at the company knows that computers also have host names as well as IP addresses. For example, their last workstation was called main-office-7.**

1. Why do computers on a network have names as well as IP addresses?
2. What is the name of the system on a TCP/IP network that maps together IP addresses and computer names?

**The boss of the company is keen to use wireless networking on site with some laptops. The engineer wants to discuss this with the boss.**

1. What might the engineer say on the subject of connection speed?
2. What might the engineer say on the subject of data security?

**Still on the subject of data security, the engineer also wants to discuss network back-ups and redundancy. He suggests using RAID 5 on the main servers and off-site backups.**

1. Explain what a ***back-up*** is. What “off-site” options might there be?
2. Explain what ***redundancy*** (on a network) means. What is meant by ***failover***?
3. Outline the idea of RAID 5.

**Again, for security, the boss has heard that it may be possible to isolate the two halves of his star network from each other by setting up a virtual network.**

1. Explain how this might work.

**The engineer also suggests some ways of controlling network users and what they are allowed to do.**

1. Explain how access to the network can be controlled.
2. List ways that can be used to control what authorised users are allowed to do.
3. What is meant by ***network policies***?

**When the network is connected to the internet through device “B” in the diagram, the engineer has said that a “firewall” will need to be set up.**

1. Is a firewall hardware or software?
2. What does a firewall do?