Revision Questions for Section 3.1 - Networks

Network fundamentals

3.1.1   Different types of networks
        Links: Network Types | Globalization

   a.   List the main **types** of computer network and indicate their **geographical** limitations.
   b.   Comment on how **globalization** has been accelerated through computer networking.

3.1.2   Network standards
        Links: OSI Model | IEEE 802.3 | IEEE 802.11 | Ethernet

   a.   Explain why international **standards** are needed in computer networks.
   b.   Comment on the ISO **OSI** network model and **IEEE 802.11** wireless standards.
   c.   Describe the **Ethernet** standard of network technologies.

3.1.3   Layers of communication
        Links: OSI Model | TCP

   a.   Identify the seven **layers** of the OSI network model and outline the **function** of each layer.
   b.   Compare the layers of the **OSI** model with **TCP/IP**.

3.1.4-5 Virtual Private Networks
        Links: VPN | 3 types of VPN | How VPNs Work | VPN videos

   a.   Name some of the underlying computer **technologies** required to provide a VPN.
   b.   State three different possible **uses** of a VPN.

Data transmission

3.1.6-7 Protocols and packets
        Links: Protocol | Data Packet | What is a Packet?

   a.   Outline the need for **protocols** in data communications.
   b.   State the typical contents of a **packet** of data.

3.1.8   Speed of transmission
        Links: Data Transmission

   a.   State some of the factors that can affect the **speed** of data transmission across a network.

3.1.9   Data compression
        Links: Data Compression | JPEG | MPEG-4

   a.   Explain what is meant by data **compression**.
   b.   Outline the **need** for data compression in digital communications.
   c.   Research some data compression **algorithms**.

3.1.10 Transmission media
Links: [Transmission Media](#) | [Twisted Pair](#) | [Optical Fibre](#) | [Wireless](#)

a.   State the main comparitive **characteristics** of transmission media.
b.   Compare **twisted-wire**, **fibre optic** and **wireless** transmission media.

3.1.11 Packet switching
Links: [Packet Switching](#)

a.   Outline the means by which data is transmitted through a **packet-switched** network.

Wireless networking

3.1.12-14 Wireless networks
Links: [WLAN](#) | [Wi-Fi](#) | [WiMAX](#) | [3G](#) | [4G](#) | [Build a Wi-Fi Network](#) | [Wi-Fi Videos](#)

a.   Compare the advantages/disadvantages of a **wireless** network to a cabled network.
b.   Describe some ways in which wireless networks have changed society.
c.   What **hardware** and **software** is required to setup a wireless network?
d.   Describe some of the operating characteristics of **WiFi**, **WiMAX** and **3G** mobile networks.

3.1.15-16 Network security
Links: [Wireless Security](#) | [WEP](#) | [WPA](#) | [MAC address](#)

a.   Describe some means of providing wireless network **security**, such as types of encryption, users IDs and MAC addresses.
b.   Compare the **benefits** and **drawbacks** of these methods.