Midterm Preparation Quiz 2

1 Upeka manages the network in her office building.

a) Upeka uses the network to install software updates on all the office computers.

Give **two** other reasons why computers are connected in a network. **(2)**

Any two from: (do not award for install updates because in the stem)

1 - (share) access internet/WWW/broadband connection (1)

- share files / data (1)
- share peripherals / printer / hardware (1)

- increase storage (network storage) (1)

2 - saves money on licenses (site licenses usually cheaper) (1)

- centralised backup (1)
- centralised security (1)

1. b) Some people confuse the terms 'internet' and 'world wide web'.

Describe the difference between the internet and the world wide web. **(2)**

Award **two** marks for a linked description that addresses the individual marked points:

- internet is a (global) network of networks / connected devices (1)

- www is the collection of web pages / services accessed using the internet (1)
- www is the recourses located via URLs / domain names (1). ← http and https.

c) Networks use both IPv4 and IPv6 addresses to identify connected devices. Explain why IPv6 addressing was introduced. **(2)**

Award **two** marks for a linked explanation such as:

- running out of IPv4 addresses / the number of (internet) connected devices has grown (1)

- IPv6 addresses are long/longer than IPv4 / number of possible addresses is large / will last much longer (1)

d) The network uses wired and wireless connectivity.

(i) State **two** advantages of using wired rather than wireless connectivity. **(2)**

Any two from:

1 - greater bandwidth / more bits per second (1)

- connection does not get worse with distance from router / more reliable (1)
- connection not obstructed by walls, ceiling, furniture (1)

2 - more secure (1)

(ii) State **two** disadvantages of using wired rather than wireless connectivity. **(2)**

Any two from:

1 - installation / maintenance is more complex (1)

- devices need physical connection (1)
- less portable / limited by length of cable (1)

- limited number of devices can be connected (1)

2 - some digital devices cannot use a wired connection (1)

- trip hazard (1)

Midterm Preparation Quiz 2

2 A network uses TCP/IP.

a) **Figure 2** shows the TCP/IP protocol stack.

Upeka sends an email to Peter. The transport layer in Upeka's computer splits the email into data packets.

State two tasks performed by the transport layer in Peter's computer when the packets arrive from the network layer. **(2)**

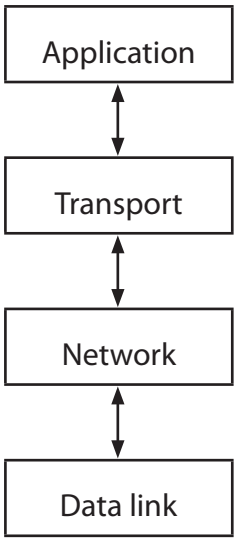

Figure 2

Any two from:

1 - passes the (reassembled) packets to the application layer (1)

- checks if all packets have arrived (1)
- determine whether the contents are correct (1)

- requests resending of lost or damaged packets (1)

2 - reassembles packets in the correct order / int an email (1)

3 Computers encode characters using ASCII and Unicode.

a) The ASCII system uses 7 bits to represent a character. The ASCII code for the character 'A' using denary is 65; other alphabetical characters follow on from this in sequence.

Determine the ASCII code for 'H', in binary. **(1)**

A 65, B 66, C 67, D 68, E 69, F 70, G 71, **H 72**

128 **64** 32 16 **8** 4 2 1 → **0100 1000 (0x48)**

b) State how many characters ASCII can represent. **(1)**

128

c) Explain why Unicode was developed. **(2)**

Award **two** marks for a linked explanation such as:

- before unicode there were hundreds of different encoding systems (1) and no single encoding system could contain enough characters to represent all major languages (1)
- Standard ASCII only provided 128 different symbols (1) and cannot represent all major languages / symbols / characters (1)
- unicode has a very large number of characters (1) so can represent all languages; ASCII was developed (just) for English (1)
- unicode uses a minimum of 16 bits (1) so can represent at least 2^{16} characters (1)