Computer Networks 2021 Quiz 1

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NOTE: Each student's work unit is unique. You *must* use the work that has been generated for your FAN. If you do not, then you will fail this work unit.

NOTE: You must record your answers in the answer file EXACTLY as required, and commit and make sure your changes have been pushed to the github server, as they will otherwise not be counted.

NOTE: The topic coordinator will periodically run the automatic marking script, which will cause a file called quiz1-results.pdf to be updated in your repository. You should check this file to make sure that your answers have been correctly counted. That file will contain the time and date that the marking script was last run, so that you can work out if it has been run since you last changed your answers. You are free to update your answers as often as you wish, until the deadline for the particular work unit.

1   Quiz#1: Chapters 1 – 3

For each question, you must record your answer in the quiz1-answers.txt *file in your git repository. Each statement is either true or false. You must record 't' if you think the statement is true, or 'f', if you think that the statement is false. Your answer must be lower case. Uppercase answers will be marked incorrect. For example, if you believed that the answer to the following question was potato, you would put the word potato at the end of the* rj= *line in the file* quiz1-answers.txt.

Question#	Description
rj	*The potato is a white-flesh starchy vegetables from which hot chips are made*

The entry in quiz1-answers.txt *would thus look like:*

```
# Question 'rj': The potato is a white-flesh starchy vegetables from which hot chips are made

rj=t
```

Templates for each answer are provided in `quiz1-answers.txt` for your convenience.

Are the following statements true or false?

1.1 Question ab: True or False?

802.11a supports higher transfer speeds than 802.11b

1.2 Question ac: True or False?

In an Ad-hoc wireless network the nodes must elect a master node to coordinate the network

1.3 Question ad: True or False?

The maximum length of an Ethernet frame is 2500 metres

1.4 Question ae: True or False?

The Shannon-Hartley Theorem describes the upper bound of the capacity of a link in terms of the noise-to-signal ratio

1.5 Question af: True or False?

The hidden node problem occurs when the transmission of two or more nodes can be received by some other node, but the transmitting nodes cannot receive the transmissions of each other

1.6 Question ag: True or False?

802.11 uses Carrier Sense Multiple Access with Collision Detection (CSMA/CD)

1.7 Question ah: True or False?

The 802.11 distribution system operates at layer 3 of the ISO architecture

1.8 Question ai: True or False?

Additional Acknowledgement involves sending a repeated ACK for the sequence number immediately prior to a lost frame

1.9 Question aj: True or False?

Ethernet does not work as well under heavy load conditions as some other alternatives, such as token ring

1.10 Question ak: True or False?

The network device driver in an operating system implements the physical layer

1.11 Question al: True or False?

Ethernet uses centralised control to determine the order in which two adaptors can attempt to send frames, so as to minimise the probability of collision

1.12 Question am: True or False?

In 802.11, if both DS bits are set to 1, this means that the frame was first sent to a different access point, before being forwarded to a client

1.13 Question an: True or False?

Wi-Fi supports power management and security mechanisms to optimise its function

1.14 Question ao: True or False?

Wireless communications requires special measures to support point-to-multipoint communications to overcome the inherent difficulty of point-to-multipoint communications using broadcast signals

1.15 Question ap: True or False?

4B/5B encoding cannot encode certain 5 bit input sequences, because they contain too many consecutive 1s or 0s

1.16 Question aq: True or False?

Most Bluetooth devices, especially computers, implement only a single profile

1.17 Question ar: True or False?

The Internet Protocol error detection algorithm uses ones-complement addition

1.18 Question as: True or False?

In a connectionless network the failure of any given switch need not have serious effect on the network if there are alternative paths available

1.19 Question at: True or False?

With infinite latency, bandwidth dominates

1.20 Question au: True or False?

Certain frequencies are reserved for specific uses, but only within certain geographical areas of each country to ensure that all frequencies are available for wireless communications in most locations

1.21 Question av: True or False?

Direct Sequence transmission involves the transmission of n-bit chopping codes that divides the signal across a frequency band that is n times wider

1.22 Question aw: True or False?

In 802.11, a node can send a probe frame to determine the set of access points that are within range

1.23 Question ax: True or False?

Baseline wander is corrected by sending a long series of 1s or 0s

1.24 Question ay: True or False?

DDCMP's byte-counting approach results in reduced efficiency due to the need to include the byte count field

1.25 Question az: True or False?

A separate Ethernet cable was required to connect each additional device on Original Ethernet

1.26 Question ba: True or False?

Switches ordinarily examine both the header and payload of a packet to decide on which ports to forward it

1.27 Question bb: True or False?

Ethernet is available in a range of speeds

1.28 Question bc: True or False?

Transmission time is the size of the data divided by transmission speed

1.29 Question bd: True or False?

In 10BaseT, the T refers to the use of T-pieces to tap into the network

1.30 Question be: True or False?

Frequency hopping is one method of spread-spectrum transmission

1.31 Question bf: True or False?

An inter-network is a number of networks connected together

1.32 Question bg: True or False?

Wavelength refers to the distance between adjacent maxima or minima of a wave

1.33   Question bh: True or False?

Error detection involves adding one or more extra bits to a frame whose values are dependent on the values of all of the other bits in the frame

1.34   Question bi: True or False?

The virtual circuit identifier of incoming and outgoing packets for a given virtual circuit on a switch may differ

1.35   Question bj: True or False?

If frames 1,2,3,5,6 and 7 have been received, and a frame with sequence number 4 is received in a Sliding Window protocol, frame 7 will be acknowledged

1.36   Question bk: True or False?

Devices that use license-exempt frequencies still face certain restrictions on their use of those license-exempt frequencies

1.37   Question bl: True or False?

NRZ encoding includes an explicit clock that can be used by clock recovery logic

1.38   Question bm: True or False?

An acknowledgements (ACK) is a short control frame sent to indicate that a frame was received

1.39 Question bn: True or False?

The maximum length of an Ethernet is based on limiting the maximum transmission time of a frame

1.40 Question bo: True or False?

Source routing is one of the most common approaches to switching and forwarding on modern networks

1.41 Question bp: True or False?

If an Ethernet is idle, a node with a frame to send will immediately send it

1.42 Question bq: True or False?

As a message goes up through a network stack, it is encapsulated and becomes smaller

1.43 Question br: True or False?

In 10Base2, the 2 refers to the maximum segment length

1.44 Question bs: True or False?

Cellular and home broadband now play significant roles in facilitating internet connections

1.45 Question bt: True or False?

An Ethernet adaptor must transmit for at least the one link latency to ensure that collisions can be detected

1.46 Question bu: True or False?

The medium network links use is a common way to characterise them

1.47 Question bv: True or False?

The Sliding Window protocol avoids the need to include sequence numbers in ACKs to improve efficiency over high bandwidth product links

1.48 Question bw: True or False?

BISYNC uses special sentinel characters to identify where a frame starts and ends, and then uses a fixed-length header field to avoid the need for other special characters

1.49 Question bx: True or False?

CRCs use a polynomial because this allows checking the errors of more bits than with a checksum

1.50 Question by: True or False?

Processing is increasingly occurring in access networks, with it becoming possible to even call some "mini data centres"

1.51 Question bz: True or False?

To start a server using the socket API the socket(), bind(), listen() and accept() functions must be called

1.52 Question ca: True or False?

A network should hide errors that occur during transmission

1.53 Question cb: True or False?

Ethernet addresses belong to network adaptors, not to hosts.

1.54 Question cc: True or False?

A network socket is the point where a local application process attaches to the network

1.55 Question cd: True or False?

A client normally selects the local port number it uses when making a connection.

1.56 Question ce: True or False?

A bit transmitted at a speed of 1Mbps would have an effective width of 1 micro second

1.57 Question cf: True or False?

The accept() function accepts the next waiting connection to a server, and returns the socket for the new connection.

1.58 Question cg: True or False?

An Ethernet adaptor will normal receive all frames addressed to its own Ethernet address, to the broadcast address or to the multi-cast address range

1.59 Question ch: True or False?

The baud rate of Manchester encoding is half the bit rate

1.60   Question ci: True or False?

Adding more hosts to a switched network degrades performance for all users, because the switch will become more congested

1.61   Question cj: True or False?

DDCMP is a bit-oriented framing protocol used in DECNet

1.62   Question ck: True or False?

HDLC relies on the checksum to detect all framing errors

1.63   Question cl: True or False?

Switches can be interconnected to form larger networks

1.64   Question cm: True or False?

Both sender and receiver must implement the same error detection algorithm

1.65   Question cn: True or False?

Point-to-point and multiple access are two kinds of packet addressing

1.66   Question co: True or False?

The 802.11 distribution system forwards frames sent by clients connected to some access point to devices connected to other access points

1.67   Question cp: True or False?

The send() function is used to send data or a message over a socket

1.68   Question cq: True or False?

Interference is much less of a problem for wireless communications, because each wireless device on a network normally operates on a different frequency

1.69   Question cr: True or False?

Switches rely on the contents of packets to get the information required to make switching and forwarding decisions

1.70   Question cs: True or False?

Two-dimensional parity calculates the parity of each byte and also that of each column of bits

1.71   Question ct: True or False?

The stop-and-wait protocol requires the use of sequence numbers to handle lost or delayed acknowledgements

1.72   Question cu: True or False?

Permanent virtual circuits require the installation of dedicated hardware, which must not be removed until the virtual circuit is deleted

1.73   Question cv: True or False?

A Protocol Specification may be expressed in written form, or in pseudo-code

1.74 Question cw: True or False?

Ethernet frames begin with the destination address, followed by preamble and data

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1.75 Question cx: True or False?

The Sliding Window protocol always acknowledges the sequence number of the frame it has most recently received