Computer Networks 2021 Quiz 1

FAN: hu0468

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?

Switching and forwarding relies on either one of hosts or ports having unique identifiers

1.2 Question ac: True or False?

Using hubs to connect multiple network switches helps avoid contention in a local area network

1.3 Question ad: True or False?

Interference avoidance in license-exempt frequencies relies on voluntary behaviours of devices that use these frequencies

1.4 Question ae: True or False?

A layered network model must have 7 layers corresponding to the OSI layered model

1.5 Question af: True or False?

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

1.6 Question ag: True or False?

When an ACK is received, the Sliding Window Size is increased by one

1.7 Question ah: True or False?

Having a larger Receiving Window Size than the Sending Window Size helps overcome out-of-order delivery of frames

1.8 Question ai: 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

1.9 Question aj: True or False?

Placing binary data on a signal is called encoding

1.10 Question ak: True or False?

The presentation layer is responsible for the format of data exchanged between peers

1.11 Question al: True or False?

Ethernets are more complex to administer than most alternatives, in part because of their use of hubs and repeaters

1.12 Question am: True or False?

If two nodes send an RTS frame at the same time a collision occurs which cannot be detected on an 802.11 network

1.13 Question an: True or False?

Two-dimensional parity is able to catch all 1, 2, 3 and 4 bit errors.

1.14 Question ao: True or False?

If a sender does not receive an acknowledgement after a reasonable amount of time, it resends the acknowledgement.

1.15 Question ap: True or False?

In the stop-and-wait protocol only one data frame can be pending acknowledgement at a time

1.16 Question aq: True or False?

Detecting that an error has occurred in a frame allows the error to be corrected, because binary values have only two values, allowing the incorrect to be flipped

1.17 Question ar: True or False?

The hidden node problem occurs when a node transmits only occasionally, thus remaining hidden from other transmitters until it transmits

1.18 Question as: True or False?

Wi-Fi is defined in the 802.11 standard

1.19 Question at: True or False?

Request and Reply are the two most common types of communications channel

1.20 Question au: True or False?

SOCK_STREAM denotes a socket which is used to carry a stream of messages over the network

1.21 Question av: True or False?

Ethernet is a decentralised network, which means it is possible that two or more adaptors to begin transmitting at the same time

1.22 Question aw: True or False?

Error correction codes typically incur too high an overhead to be attractive

1.23 Question ax: True or False?

BISYNC's sentinel characters are used to synchronise the start of a frame

1.24 Question ay: True or False?

The Sliding Window protocol tends to slow down if packets are lost

1.25 Question az: True or False?

Both sender and receiver must implement the same error detection algorithm

1.26 Question ba: True or False?

CRCs are a common technique for correcting transmission errors

1.27 Question bb: True or False?

Technical factors, such as new technologies, are effectively the sole driver of evolution in networks

1.28 Question bc: True or False?

Switching tables and routing tables are different names for essentially the same structure

1.29 Question bd: True or False?

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

1.30 Question be: True or False?

If an Ethernet is idle, a node with a frame to send will wait a short random period of time before sending the frame, to help avoid packet collisions

1.31 Question bf: True or False?

In 802.11, the term active scanning refers to the way in which access points actively scan for new clients

1.32 Question bg: True or False?

Switches can implement either datagram or virtual circuit approaches

1.33 Question bh: True or False?

Ethernet is available in a range of speeds

1.34   Question bi: True or False?

Congestion is a cause of packet loss

1.35   Question bj: True or False?

NRZI encoding solves the problem of sending consecutive 0s

1.36   Question bk: True or False?

An Application Programmer is responsible for specifying the needs of their applications

1.37   Question bl: True or False?

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

1.38   Question bm: True or False?

Ethernet frames can be anywhere between 1 and 1500 bytes long

1.39   Question bn: True or False?

video-conferencing is an example of an application of computer networking

1.40   Question bo: True or False?

DDCMP (Digital Data Communications Protocol) is a byte-oriented framing protocol

1.41 Question bp: True or False?

Two-dimensional parity calculates both odd and even parity for each each byte to increase its strength

1.42 Question bq: True or False?

Frequency hopping requires the use of a pseudo-random frequency sequence which must be known to both the sender and receiver

1.43 Question br: True or False?

Only if the sequence number less than the Largest Acceptable Frame it will be accepted

1.44 Question bs: True or False?

Most widely used wireless links are asymmetric in the devices that participate

1.45 Question bt: True or False?

Baseline wander is a problem with NRZ encoding

1.46 Question bu: True or False?

In 802.11, the control field contains flags to indicate whether a frame is an RTS or CTS frame

1.47 Question bv: True or False?

URL stands for uniform resource location

1.48   Question bw: True or False?

In 802.11, if a client receives a beacon from an access point with a stronger signal, it will send a probe frame to determine if it can switch to that access point.

1.49   Question bx: True or False?

Very strong transmission error detection can normally be provided using very few additional bits compared with the size of the data

1.50   Question by: True or False?

The bandwidth delay product does not affect the optimal size of the sliding window

1.51   Question bz: True or False?

4B/5B encoding solves the problem of sending consecutive 1s or 0s

1.52   Question ca: True or False?

The data link layer is above the network layer in the OSI network stack

1.53   Question cb: True or False?

The network API is called by the operating system to connect to different applications

1.54   Question cc: 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

1.55 Question cd: True or False?

In 802.11, access points respond to client association requests with an association response frame

1.56 Question ce: True or False?

Frequency allocations for wireless communications are made by the Internet Engineering Task Force

1.57 Question cf: True or False?

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

1.58 Question cg: True or False?

Fibre-optics typically uses frequencies that are in the X-Ray band

1.59 Question ch: True or False?

If a node receives an RTS frame, but not a CTS frame, it must wait for a timeout to occur, and then transmit a NACK

1.60 Question ci: True or False?

Variation in latency is a problem for audio/video conferencing

1.61 Question cj: True or False?

Synchronous Time-division Multiplexing is a method for sharing a link

1.62 Question ck: True or False?

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

1.63 Question cl: True or False?

Wireless links transmit using electromagnetic signals, typically at gamma wavelengths, especially for gigabit speeds

1.64 Question cm: True or False?

Wireless technologies differ considerably in the bandwidth and range of communications that they facilitate

1.65 Question cn: True or False?

The international standard for CRC generator polynomials is to allocate a unique generator polynomial each time one is required

1.66 Question co: True or False?

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

1.67 Question cp: True or False?

Bluetooth is used to connect mobile phones, network computers and other personal devices because it provides higher bandwidth at short ranges than Wi-Fi can provide

1.68 Question cq: True or False?

Broadcast Ethernet frames use a special preamble code consisting of all 1s, so that every device on the Ethernet knows to listen

1.69 Question cr: True or False?

Twisted-Pair Ethernet increases the maximum length of network segments compared with original Ethernet

1.70 Question cs: True or False?

In 802.11, if both DS bits are set to 1, the fourth address field identifies the original source

1.71 Question ct: True or False?

When a node wishes to transmit a frame, it must wait for a network adaptor to receive a Clear To Send indication from the connected node

1.72 Question cu: True or False?

In 10Base2, the Base refers to "baseband"

1.73 Question cv: True or False?

Two-dimensional parity is parity performed in two different directions, and also includes the parity of the parity

1.74 Question cw: True or False?

The Internet Protocol uses a CRC to detect transmission errors

1.75 Question cx: True or False?

The Internet Architecture forms an hour-glass shape with the Internet Protocol as the focal point