

Computer Networks 2021 Quiz 1

FAN: li2065

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?

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

1.2 Question ac: 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

1.3 Question ad: True or False?

BISYNC is a byte-oriented framing protocol

1.4 Question ae: True or False?

Ethernets are easy to administer and inexpensive

1.5 Question af: True or False?

In 802.11, if both DS bits are set to 1, the third address field identifies the access point that first accepted the frame from the client

1.6 Question ag: True or False?

Increased separation of software and hardware in network devices is powering network innovation

1.7 Question ah: True or False?

A license from an agency like the FCC is required to use any frequency in any frequency band

1.8 Question ai: True or False?

A switch is a multi-input multi-output device which transfers packets from an input to one or more outputs

1.9 Question aj: True or False?

In 802.11, a client may only request association with a different access point if the first access point has disconnected it

1.10 Question ak: True or False?

The aggregate throughput through a switch can never exceed the maximum bandwidth of each of its ports

1.11 Question al: True or False?

Every Ethernet frame must be at least 512 bytes long

1.12 Question am: True or False?

Ethernet is derived from the ALOHA packet radio network in Hawaii

1.13 Question an: 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

1.14 Question ao: True or False?

DDCMP's byte-counting approach allows for slightly improved efficiency compared with a sentinel-based approach

1.15 Question ap: True or False?

HDLC avoids the need to send extra bits when long sequences of 1s are sent

1.16 Question aq: True or False?

NRZI encoding solves the problem of sending consecutive 0s

1.17 Question ar: True or False?

Ethernet uses a 64-bit preamble to enable synchronisation by the receiver

1.18 Question as: True or False?

A switched network uses a star topology

1.19 Question at: True or False?

Out-of-order message delivery is a problem for network reliability

1.20 Question au: True or False?

Direct Sequence represents each bit in the frame by multiple bits in the transmitted signal

1.21 Question av: True or False?

Delay bounded delivery of data is an important requirement to consider when designing a network application

1.22 Question aw: True or False?

A single request to fetch a URL involves sending a single request packet and receiving a response packet in response

1.23 Question ax: True or False?

The baud rate of Manchester encoding is half the bit rate

1.24 Question ay: True or False?

The create() function is used to create a socket.

1.25 Question az: True or False?

Spread-spectrum transmission is a requirement for using license-free frequencies in many countries

1.26 Question ba: True or False?

The higher the bandwidth delay product, the easier it is to keep the network fully utilised

1.27 Question bb: True or False?

The Socket Interface for network programming is supported by almost all operating systems

1.28 Question bc: True or False?

The use of acknowledgements and timeouts together is often called Automatic inteRrupt reQuest (ARQ)

1.29 Question bd: True or False?

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

1.30 Question be: True or False?

Error detection bits add no new information to the message

1.31 Question bf: True or False?

Wireless communications naturally supports point-to-multipoint communications

1.32 Question bg: True or False?

The Sliding Window Protocol helps provide reliability in the face of packet loss, in-order reception of data and throttling of the sender's transmission rate

1.33 Question bh: True or False?

Tightening bandwidth implies a more efficient, faster network

1.34 Question bi: True or False?

Network links are typically characterised by their speed, rather than by the medium that they use

1.35 Question bj: True or False?

HDLC relies on the checksum to detect all framing errors

1.36 Question bk: True or False?

When any node receives a CTS frame, it indicates that it is its turn to transmit

1.37 Question bl: True or False?

It takes double the one-link latency before a collision on an Ethernet network is detected

1.38 Question bm: True or False?

To propose a new protocol for the Internet, submitting an acceptable protocol specification is the key requirement

1.39 Question bn: True or False?

Protocols must be inter-operable for them to serve their primary purpose

1.40 Question bo: True or False?

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

1.41 Question bp: True or False?

The 802.11 distribution system requires that at least one client is within range of each pair of access points in a given system, so that frames can be relayed between the access points.

1.42 Question bq: True or False?

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

1.43 Question br: True or False?

Each time an Ethernet adaptor tries to transmit but fails, it waits a random multiple of 51.2 microseconds, where the maximum multiple increases with the number of failed transmission attempts

1.44 Question bs: True or False?

Increasing the signal-to-noise ratio increases the maximum capacity of a link

1.45 Question bt: True or False?

Multiplexing is a method for sharing a link

1.46 Question bu: True or False?

Wireless technologies offer substantially similar bandwidth and range of communications, because they all use the same transmission medium which has approximately constant properties

1.47 Question bv: True or False?

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

1.48 Question bw: True or False?

The Internet Protocol error detection algorithm uses a non-linear CRC

1.49 Question bx: True or False?

Demodulation is the process of encoding a signal by modifying its frequency, amplitude or phase

1.50 Question by: True or False?

An inter-network is the space between two or more intra-networks

1.51 Question bz: True or False?

An acknowledgement is sent whenever a peer is ready to receive a frame

1.52 Question ca: True or False?

The listen() function defines the number of pending connections that can be queued on a socket

1.53 Question cb: True or False?

The broadcast address on an Ethernet network consists of all 1s

1.54 Question cc: True or False?

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

1.55 Question cd: True or False?

Client/Server is a common communications pattern

1.56 Question ce: True or False?

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

1.57 Question cf: True or False?

Servers normally listen for connections only on a well-known port number

1.58 Question cg: 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

1.59 Question ch: True or False?

In 802.11, one of the measures that reduces the size of RTS and CTS frames is that they do not contain the control header field

1.60 Question ci: 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 4 will be acknowledged

1.61 Question cj: True or False?

Access network technologies have effectively matured, and most network evolution is now taking place in the core and the cloud

1.62 Question ck: True or False?

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

1.63 Question cl: True or False?

Protocol means the specifications of a peer-to-peer interface, but never the module that implements the interface, which is instead called the Network Driver

1.64 Question cm: True or False?

802.11 uses Multiple Access with Collision Avoidance (MACA)

1.65 Question cn: True or False?

The Service Interface of a protocol is used by higher level objects to influence the behaviour of the protocol

1.66 Question co: True or False?

Acknowledgements and timeouts can be used in place of error correcting codes to recover from transmission errors

1.67 Question cp: True or False?

The cloud is an abstraction that allows the use of networks without needing to know their internal complexities

1.68 Question cq: True or False?

An Ethernet adaptor will normally receive all frames addressed to its own Ethernet address, the broadcast address and any subscribed multi-cast addresses

1.69 Question cr: True or False?

Interference is a much greater problem for wireless communications than for modern cabled switched networks

1.70 Question cs: True or False?

Ethernet uses an exponential back-off algorithm for responding to collisions

1.71 Question ct: True or False?

4B/5B encoding results in several invalid 5-bit sequences, which can each be used to encode various control signals

1.72 Question cu: True or False?

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

1.73 Question cv: True or False?

video-conferencing connects broadband subscribers with the rest of the internet

1.74 Question cw: True or False?

The maximum length of an Ethernet frame exists to limit the time required to detect a collision

1.75 Question cx: True or False?

computer networks enable access to services such as social media