

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?

Greater bandwidth implies a faster network

1.2 Question ac: True or False?

BISYNC requires the use of data-link escape characters

1.3 Question ad: True or False?

Checksums and parity checks were introduced to provide stronger transmission error detection than CRCs can provide

1.4 Question ae: True or False?

In 802.11, the control field is used to indicate whether a frame has been forwarded via a distribution system or not

1.5 Question af: True or False?

The network layer is responsible for routing packets among nodes in a packet switched network

1.6 Question ag: True or False?

NRZ is the method for encoding binary signals on computer networks

1.7 Question ah: True or False?

In a virtual-circuit network, the sender has no idea whether the network can deliver a packet to a given recipient, or even if the recipient exists or is on the network

1.8 Question ai: True or False?

Receivers using the Sliding Window Protocol must keep track of the receiving window size, last frame sent and number of outstanding acknowledgements

1.9 Question aj: True or False?

A disadvantage with Manchester encoding is that it doubles the rate of signal transitions

1.10 Question ak: True or False?

Latency is the sum of propagation, transmission and queue time

1.11 Question al: True or False?

ISDN is many times faster than dial-up connections

1.12 Question am: True or False?

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

1.13 Question an: True or False?

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

1.14 Question ao: 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.

1.15 Question ap: True or False?

LAN, MAN, WAN and SAN are all acronyms for types of networks

1.16 Question aq: True or False?

Bit-oriented data framing protocols are not suitable for byte-oriented data streams

1.17 Question ar: True or False?

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

1.18 Question as: True or False?

In the worst case, it can take as many as 512 bits of transmission before collision on an Ethernet can be detected

1.19 Question at: True or False?

Ethernet adaptors rely on ACKs and timeouts to detect when collisions occur

1.20 Question au: True or False?

Routers need only implement the lower layers of a network protocol stack

1.21 Question av: True or False?

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

1.22 Question aw: True or False?

Protocols define the interface between layers in a network stack

1.23 Question ax: True or False?

Certain frequency bands do not require a license to use

1.24 Question ay: True or False?

Ethernet frames must contain at least 46 bytes of data

1.25 Question az: True or False?

The virtual circuit identifier of incoming and outgoing packets for a given virtual circuit on a switch must match

1.26 Question ba: True or False?

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

1.27 Question bb: True or False?

Signals placed on the Ethernet are directed to the intended receiver only, unless it is a broadcast frame

1.28 Question bc: True or False?

Network adaptors concern themselves primarily with the encoding and decoding of individual bits. Frame boundaries are generally detected by the main processor of the computer, because it is much faster than the processor included in a network adaptor.

1.29 Question bd: True or False?

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

1.30 Question be: True or False?

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

1.31 Question bf: True or False?

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

1.32 Question bg: True or False?

To create a socket using the socket API the socket() function call is used

1.33 Question bh: True or False?

The bind() function call links a socket to a specific network and transport address (IP address and port)

1.34 Question bi: True or False?

4B/5B encoding is less efficient than Manchester encoding, because of the extra bits it has to send

1.35 Question bj: True or False?

The network API provides the syntax by which network services can be accessed

1.36 Question bk: True or False?

Ethernet addresses are 6 bytes long

1.37 Question bl: True or False?

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

1.38 Question bm: True or False?

Variation in latency is a problem for audio/video conferencing

1.39 Question bn: True or False?

Switches can implement either datagram or virtual circuit approaches

1.40 Question bo: True or False?

BISYNC is a byte-oriented framing protocol

1.41 Question bp: True or False?

The Sending Window Size and the Receiving Window Size can be different sizes

1.42 Question bq: 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

1.43 Question br: True or False?

The exposed node problem occurs when a node can hear the transmission from multiple nodes that cannot hear each others transmissions, and thus they might all transmit at the same time, causing a collision

1.44 Question bs: True or False?

Each switch must construct both switching tables and routing tables to fulfil its functions

1.45 Question bt: True or False?

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

1.46 Question bu: True or False?

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

1.47 Question bv: True or False?

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

1.48 Question bw: True or False?

Ethernet is the most successful local area networking technology over recent decades

1.49 Question bx: True or False?

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

1.50 Question by: True or False?

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

1.51 Question bz: True or False?

Setting the maximum sequence number to double the Receiving Window Size ensures that the receiver cannot be confused

1.52 Question ca: True or False?

802.11g is backwards compatible with 802.11a

1.53 Question cb: True or False?

The ALOHA packet radio network was developed from Ethernet as the pre-cursor to 802.11 Wi-Fi

1.54 Question cc: True or False?

Modulation is the process of modifying a signal, typically the frequency, amplitude or phase

1.55 Question cd: True or False?

802.11 uses special frames to enable senders to reserve a short period of time in which they can send a frame

1.56 Question ce: True or False?

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

1.57 Question cf: True or False?

With infinite bandwidth, latency dominates

1.58 Question cg: True or False?

Ethernet addresses are determined by the host

1.59 Question ch: True or False?

Mobility between base stations is not a property of all commonly used wireless communications technologies

1.60 Question ci: True or False?

A logical channel is a network path that meets the specified logical requirements

1.61 Question cj: True or False?

Switching and forwarding relies on the assumption that each device has a globally unique address

1.62 Question ck: True or False?

Both sender and receiver must implement the same error detection algorithm

1.63 Question cl: True or False?

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

1.64 Question cm: True or False?

Eavesdropping on network traffic is not a network reliability problem

1.65 Question cn: True or False?

A switch is connected to a set of links, which must all use the same data link protocol

1.66 Question co: True or False?

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

1.67 Question cp: True or False?

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

1.68 Question cq: True or False?

Each entry in a virtual-circuit table must contain the source and destination of the address of the end points, a virtual circuit identifier and the outgoing interface for the circuit

1.69 Question cr: True or False?

Increasing the signal-to-noise ratio increases the noise-induced errors of a link

1.70 Question cs: True or False?

In an internet protocol graph application protocols appear at the top, and the networks at the bottom

1.71 Question ct: True or False?

No more than four devices can be connected to each Ethernet repeater, before an additional repeater is required

1.72 Question cu: True or False?

Circuit Switched and Packet Switched are two kinds of store-and-forward technologies

1.73 Question cv: 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

1.74 Question cw: True or False?

The IP address must be discovered before an HTTP request can be made

1.75 Question cx: True or False?

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