

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?

A single original Ethernet cable could be used to connect many devices

1.2 Question ac: True or False?

Switches can be interconnected to form larger networks

1.3 Question ad: True or False?

The original Wi-Fi standard was limited to 2Mbits per second

1.4 Question ae: True or False?

5G networks offer higher speed and lower latency compared with earlier generations

1.5 Question af: True or False?

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

1.6 Question ag: True or False?

The maximum length of an Ethernet is based on limiting the round-trip latency to around 51 micro seconds

1.7 Question ah: True or False?

Both sender and receiver must implement the same error detection algorithm

1.8 Question ai: True or False?

Bluetooth supports parking devices, i.e., un-pairing the device to allow another device to connect in its place

1.9 Question aj: True or False?

The Internet Architecture, like the OSI model, uses strict layering

1.10 Question ak: 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

1.11 Question al: True or False?

Acknowledgements and timeouts are not an effective alternative to error correcting codes for recovering from transmission errors

1.12 Question am: True or False?

Most widely used wireless links include only mobile devices

1.13 Question an: True or False?

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

1.14 Question ao: True or False?

When a node wishes to transmit a frame, it requests the network adaptor to do this

1.15 Question ap: True or False?

Satellite communications typically use similar frequencies to terrestrial microwave communications

1.16 Question aq: True or False?

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

1.17 Question ar: True or False?

The Internet Protocol error detection algorithm uses ones-complement addition

1.18 Question as: 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

1.19 Question at: True or False?

The peer-to-peer interface of a protocol is used to distribute the software that implements a given protocol

1.20 Question au: True or False?

One advantage of Bluetooth is low power consumption

1.21 Question av: True or False?

Collision between Ethernet frames results in a 96-bit "runt frame".

1.22 Question aw: True or False?

In the Internet Architecture the application layer directly interfaces only to the transport layer, as the next layer down in the network stack.

1.23 Question ax: True or False?

Ethernet networks are not able to sense when multiple nodes transmit at the same time

1.24 Question ay: True or False?

State transition diagrams are similar to phase diagrams in their use in designing network protocols

1.25 Question az: True or False?

The application layer standardises common types of exchanges

1.26 Question ba: True or False?

Wireless links transmit using electromagnetic signals, typically at radio, microwave or infra-red wavelengths

1.27 Question bb: True or False?

The longer the data being transmitted, the more additional bits are required in order to detect the same percentage of errors.

1.28 Question bc: True or False?

Ethernet is derived from the ALOHA packet radio network in Hawaii

1.29 Question bd: True or False?

Ethernet addresses belong to network adaptors, not to hosts.

1.30 Question be: True or False?

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

1.31 Question bf: True or False?

The hidden node problem is a significant problem for wireless networks

1.32 Question bg: True or False?

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

1.33 Question bh: True or False?

Transmission time is the sum of the latency plus propagation time of a packet

1.34 Question bi: True or False?

The listen() function is called by a server each time it wishes to listen for a new connection

1.35 Question bj: True or False?

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

1.36 Question bk: True or False?

In 802.11, if a client receives a beacon, it does not need to send a probe frame before sending an access request

1.37 Question bl: True or False?

host-to-host connectivity is a major goal of computer networks

1.38 Question bm: True or False?

NRZI changes the signal every time a 0 or a 1 is encoded, making it easier to synchronise

1.39 Question bn: True or False?

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

1.40 Question bo: True or False?

Wireless communications naturally supports point-to-multipoint communications

1.41 Question bp: True or False?

Every Ethernet frame must be at least 512 bytes long

1.42 Question bq: True or False?

4B/5B encoding limits the number of consecutive 1s or 0s that are encoded over a link

1.43 Question br: True or False?

In 802.11, the use of probe frames is referred to as active scanning

1.44 Question bs: True or False?

CRCs are a common technique for correcting transmission errors

1.45 Question bt: True or False?

It is the role of the Network Provider to identify the characteristics of a system that make it easy to manage

1.46 Question bu: True or False?

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

1.47 Question bv: True or False?

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

1.48 Question bw: True or False?

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

1.49 Question bx: True or False?

When using the Sliding Window Protocol, the sender has to be willing to buffer up to SWS (Sliding Window Size) frames

1.50 Question by: True or False?

Switches examine the header of a packet to decide on which ports to forward the packet

1.51 Question bz: True or False?

Virtual-circuits are a connection-oriented networking approach

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?

An Ethernet repeater forwards signals in the analog domain

1.54 Question cc: 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

1.55 Question cd: True or False?

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

1.56 Question ce: True or False?

Frequency hopping is one method of spread-spectrum transmission

1.57 Question cf: True or False?

When a frame error is detected, two approaches to recover from it are to resend the entire frame, or to use some error detection and correction algorithm to allow the receiver to reconstruct the message

1.58 Question cg: True or False?

Ethernet networks are permitted to have up to 1,024 hosts

1.59 Question ch: True or False?

Ethernet addresses are 6 bytes long

1.60 Question ci: True or False?

In 10BaseT, the T refers to Twisted-pair cable

1.61 Question cj: True or False?

Wi-Fi power management is the responsibility of the operating system, with Wi-Fi focusing on the media access control and security mechanisms

1.62 Question ck: True or False?

In 802.11, access points periodically send probe frames to identify any clients waiting to connect

1.63 Question cl: True or False?

PPP uses 0x3e as start-of-text character

1.64 Question cm: True or False?

HDLC relies on the checksum to detect all framing errors

1.65 Question cn: True or False?

The Sending Window Size refers to the number of unacknowledged frames that can be outstanding at any moment in time

1.66 Question co: 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

1.67 Question cp: 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

1.68 Question cq: True or False?

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

1.69 Question cr: True or False?

A layered network model can offer multiple different abstractions for one or more of the network layers

1.70 Question cs: True or False?

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

1.71 Question ct: True or False?

For interactive network connections bandwidth is more important than latency

1.72 Question cu: True or False?

A logical channel is an application-to-application communication path

1.73 Question cv: True or False?

The maximum sequence number must be larger than double the Sending Window Size minus 1

1.74 Question cw: True or False?

Multiplexing uses multiple or additional plexi-glass cables to increase the capacity of a network

1.75 Question cx: 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