

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?

CRCs are a common technique for correcting transmission errors

1.2 Question ac: True or False?

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

1.3 Question ad: True or False?

One of the ways that Bluetooth reduces power consumption is through allowing slave devices to communicate directly with each other, without requiring re-transmission through the master device

1.4 Question ae: True or False?

For long-distance oceanic internet cable links minimising the bandwidth delay product is a primary goal

1.5 Question af: True or False?

Terminators are added to an Ethernet to increase the maximum size of the Ethernet

1.6 Question ag: True or False?

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

1.7 Question ah: True or False?

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

1.8 Question ai: True or False?

PF_INET, PF_UNIX and PF_PACKET are three different protocol families in the socket API

1.9 Question aj: True or False?

The 802.11 distribution system avoids the needs for any access point to have a wired connection

1.10 Question ak: True or False?

DSL and fibre-to-the-home connections have overlapping speed ranges

1.11 Question al: True or False?

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

1.12 Question am: True or False?

Variation in latency is not important, as long as the average latency remains unchanged

1.13 Question an: True or False?

Bluetooth WiMAX are well known wireless technologies

1.14 Question ao: True or False?

Wi-Fi is defined in the 802.11 standard

1.15 Question ap: 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

1.16 Question aq: True or False?

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

1.17 Question ar: True or False?

The network layer is responsible for network framing

1.18 Question as: 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.

1.19 Question at: True or False?

NRZ is the method for encoding binary signals on computer networks

1.20 Question au: True or False?

To connect two switches together a router must be placed between them

1.21 Question av: True or False?

The application layer standardises common types of exchanges

1.22 Question aw: True or False?

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

1.23 Question ax: True or False?

If an Ethernet is busy, a node with a frame to send will wait until the line goes idle, and then transmit it immediately

1.24 Question ay: True or False?

In a connectionless network, a virtual-circuit between the source and destination host must first be established, before data can be sent between them

1.25 Question az: True or False?

Receivers using the Sliding Window Protocol must keep track of the receiving window size, largest acceptable frame and last frame received

1.26 Question ba: True or False?

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

1.27 Question bb: True or False?

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

1.28 Question bc: True or False?

Ethernet is available in a range of speeds

1.29 Question bd: True or False?

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

1.30 Question be: True or False?

In an Ad-hoc wireless network messages may be forwarded via several nodes to reach their destination

1.31 Question bf: True or False?

If a layered network model offers multiple different abstractions for one layer, it must also offer alternative abstractions for all layers higher in the network stack

1.32 Question bg: True or False?

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

1.33 Question bh: True or False?

In 802.11, a client may attempt to connect to a different access point while retaining its current connection to another access point

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?

Multiplexing is a method for sharing a link

1.36 Question bk: True or False?

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

1.37 Question bl: True or False?

When multiple packets are sent on a virtual circuit network to the same destination, they will be sent via the first virtual circuit that has space

1.38 Question bm: 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

1.39 Question bn: True or False?

Switches can implement either datagram or virtual circuit approaches

1.40 Question bo: True or False?

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

1.41 Question bp: True or False?

Switches combine the partial destination address of a packet with other information to make switching and forwarding decisions

1.42 Question bq: True or False?

HDLC uses a sequence of exactly five consecutive 1s to indicate the end of a frame

1.43 Question br: True or False?

The connect() function is used by a client to connect to a server

1.44 Question bs: True or False?

For a host to request a virtual circuit to be established, it is also required that the network administrator configures the virtual circuit

1.45 Question bt: True or False?

NRZI changes the signal every time a 1 is encoded

1.46 Question bu: True or False?

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

1.47 Question bv: True or False?

It is the network adaptors that enable nodes to exchange frames

1.48 Question bw: True or False?

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

1.49 Question bx: True or False?

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

1.50 Question by: True or False?

802.11 frames normally contain four address fields

1.51 Question bz: True or False?

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

1.52 Question ca: True or False?

When using the Sliding Window Protocol, the sender has to be willing to buffer up to LFS (Last Frame Sent) frames

1.53 Question cb: True or False?

There are several CRC generator polynomials for CRCs that have become commonly used international standards

1.54 Question cc: True or False?

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

1.55 Question cd: True or False?

Cloud Networking is a catch-all for parts of the network that you do not control

1.56 Question ce: True or False?

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

1.57 Question cf: True or False?

The most effective transmission error detection schemes are those that use the least number of additional bits

1.58 Question cg: True or False?

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

1.59 Question ch: True or False?

Every Ethernet frame must be at least 512 bytes long

1.60 Question ci: True or False?

The Last Acknowledgement Received plus the Sliding Window Size must be no larger than the Last Frame Sent

1.61 Question cj: True or False?

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

1.62 Question ck: True or False?

When a message is delayed, but eventually delivered, this is not a network reliability problem, but only a performance problem

1.63 Question cl: True or False?

Manchester encoding makes it easier to synchronise the signal, without increasing the bandwidth required to carry the signal

1.64 Question cm: True or False?

It is possible for the aggregate throughput through a switch to be many times the maximum bandwidth of each of its ports

1.65 Question cn: True or False?

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

1.66 Question co: True or False?

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

1.67 Question cp: True or False?

5G networks trade off latency to obtain higher speeds compared with earlier cellular networks

1.68 Question cq: True or False?

A switch is connected to a set of links, which do not need to use the same data link protocol

1.69 Question cr: True or False?

An advantage of NRZ encoding is that it does not require precise synchronisation

1.70 Question cs: True or False?

Protocols define the interface between layers in a network stack

1.71 Question ct: True or False?

4B/5B encoding allows the encoding of control signals using spare valid 5-bit sequences

1.72 Question cu: True or False?

In 10Base2, the 2 refers to the speed, i.e., 2Mbit/sec

1.73 Question cv: True or False?

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

1.74 Question cw: True or False?

Error correction codes are always preferable to error detection codes, because they avoid the need to re-transmit frames that contain errors

1.75 Question cx: True or False?

Satellite communications typically use similar frequencies to terrestrial microwave communications