Computer Networks 2021 Quiz 2

FAN: worr0028

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 quiz2-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#2: Chapters 4 – 6

For each question, you must record your answer in the quiz2-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* `quiz2-answers.txt`.

Question#	Description
`rj`	*The potato is a white-flesh starchy vegetables from which hot chips are made*

The entry in `quiz2-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 `quiz2-answers.txt` for your convenience.

Are the following statements true or false?

1.1 Question ab: True or False?

Border Gateway Protocol speakers must provide a replacement path when deleting a previously advertised path

1.2 Question ac: True or False?

If the RESET flag in a TCP packet is set, the window size should be reset

1.3 Question ad: True or False?

Routing Areas refer to the different algorithm areas in routing protocol design

1.4 Question ae: True or False?

RSVP can be used for unicast, while RSVM is used for multicast flows

1.5 Question af: True or False?

Multicast in IP is structured as a many-to-many system

1.6 Question ag: True or False?

Transport protocols often have to contend with electromagnetic interference flipping bits in packets

1.7 Question ah: True or False?

If the TCP Slow Start algorithm is triggered due to sliding window exhaustion, the Slow Start procedure stops once the previous peak congestion window size is reached

1.8 Question ai: True or False?

The TSpec of a Flowspec describes the network service that has been requested

1.9 Question aj: True or False?

Each Autonomous System should contain only a single router

1.10 Question ak: True or False?

IPv6 does not support multicast, but instead uses its mobility features to provide the same functionality

1.11 Question al: True or False?

Transport protocols typically operate on fixed sized messages

1.12 Question am: True or False?

Flowspec can use a Token Bucket Filter to enforce average bandwidth allocations, however this does not work well for variable bitrate sources

1.13 Question an: True or False?

Mobile IP uses home agents, foreign addresses and foreign agents to facilitate mobility

1.14 Question ao: True or False?

Peering Points are typically only found in wireless ad-hoc networks

1.15 Question ap: True or False?

Many networking functions are being absorbed into cloud services

1.16 Question aq: True or False?

The original TCP retransmission timeout was set to the estimated RTT of the network path

1.17 Question ar: True or False?

Each Autonomous System has exactly one border gateway

1.18 Question as: True or False?

RPC is a protocol that sits on top of IP, similar to TCP and UDP

1.19 Question at: True or False?

The power of a network is often expresses as the delay divided by the throughput

1.20 Question au: True or False?

The TCP slow start algorithm increases the TCP congestion window size more slowly during the initial stages of a connection

1.21 Question av: True or False?

Flowspec is a mechanism in RSVP for providing routers with additional information to enable them to better meet quality-of-service promises

1.22 Question aw: True or False?

FIFO Queuing maintains separate queues per network flow, to improve fairness

1.23 Question ax: True or False?

Multicast avoids the need for each sender to maintain the list of members of the multicast group, even as members join and leave

1.24 Question ay: True or False?

The advertised window of a TCP connection should be at least double the bandwidth-delay product of the network path to maximise network throughput

1.25 Question az: True or False?

Some real-time applications can tolerate lost packets better than others

1.26 Question ba: True or False?

Multiple priority queues in FIFO queuing are typically used to ensure that an equal number of packets from each queue are sent per unit time

1.27 Question bb: True or False?

An example of one-to-many multicast would be online multi-player games

1.28 Question bc: True or False?

TCP normally buffers enough bytes to fill a reasonable sized packet on the sending side, before dispatching it

1.29 Question bd: True or False?

Congestion control exists to prevent senders from overrunning the capacity of intermediate devices and links on a network

1.30 Question be: True or False?

The Jacobson/Karels algorithm simplifies the TCP retransmission delay, by tracking only the variance in RTT, rather than the RTT itself

1.31 Question bf: True or False?

Source-based Congestion Avoidance works by having routers provide a separate packet queue for each source

1.32 Question bg: True or False?

Within an Autonomous System, all internal and border routers must run an inter-domain routing protocol

1.33 Question bh: True or False?

It is the responsibility of routers to ensure that multicast behaves correctly from the perspective of connected devices

1.34 Question bi: True or False?

The advertised window field in the TCP header could not be extended without messing up the sliding window protocol

1.35 Question bj: True or False?

UDP uses a simpler sliding window protocol than TCP

1.36 Question bk: True or False?

The role of a transport protocol is to present an unreliable network to applications as a reliable data transport

1.37 Question bl: True or False?

Key network resources to be allocated include the bandwidth of links and buffers at routers and switches

1.38 Question bm: True or False?

Packet lengths should be taken into account with Fair Queuing (FQ), to ensure actual fair sharing of bandwidth

1.39 Question bn: True or False?

Latency as well as bandwidth are important for providing the necessary Quality-of-Service for various network applications

1.40 Question bo: True or False?

The UDP header contains source port, destination port, checksum and length fields

1.41 Question bp: True or False?

Each Class A address range on IPv6 consists of an 8-bit

1.42 Question bq: True or False?

Large corporations are required to connect to multiple backbones to provide redundancy

1.43 Question br: True or False?

TCP implements a reliable data transport for UDP

1.44 Question bs: True or False?

The TCP Slow Start algorithm exists to slow the increase in congestion window size growth before the first packet loss occurs

1.45 Question bt: True or False?

Rate-based networking approaches seek to minimise the packet rate on a network, so as to avoid congestion.

1.46 Question bu: True or False?

MPLS provides traffic engineering facilities to the Internet

1.47 Question bv: True or False?

Reverse Path Broadcast is used to propagate the return path for two-way multicast traffic

1.48 Question bw: True or False?

Border Gateway Protocol 4 assumes the Internet has a tree-based topology with back-bone providers at the root

1.49 Question bx: True or False?

Differentiated Servicese the port number of TCP and UDP packets to identify the required traffic class

1.50 Question by: True or False?

TCP can be used to transfer data using the full capacity of network links of any speed, as the sliding window algorithm will correct any out-of-order delivery

1.51 Question bz: True or False?

"Integrated Services" is a quality-of-service scheme that, among other things, allows for reservations

1.52 Question ca: True or False?

IPv6 improves on IPv4 by reducing the header size to increase payload size

1.53 Question cb: True or False?

The MSS of a TCP connection is the Maximum Segment Size, which is the MTU of the network link minus the TCP and IP header sizes

1.54 Question cc: True or False?

Border Gateway Protocol replaced Border Exterior Gateway Protocol so that the network of Autonomous Systems could again be structured as a tree

1.55 Question cd: True or False?

Both hosts and network elements are involved in congestion control and resource allocation on networks

1.56 Question ce: True or False?

TCP uses a three-way handshake when establishing a connection

1.57 Question cf: True or False?

BGP relies on providers being able to trust the advertisements provided by other providers

1.58 Question cg: True or False?

IPv6's 128-bit addresses are four times longer than IPv4's address, and thus allow 4x more IP addresses than IPv4, thus avoiding the risk of IP address exhaustion

1.59 Question ch: True or False?

If the TCP Slow Start algorithm is re-started, the Congestion Threshold is reset to 0

1.60 Question ci: True or False?

The TCP source port field is at byte offset 0 in the TCP header

1.61 Question cj: True or False?

Routers maintain separate multicast forwarding tables from unicast forwarding tables for multicast to function

1.62 Question ck: True or False?

When a mobile IP device moves networks, the home agent may need to send a binding warning notice

1.63 Question cl: True or False?

Silly Window Syndrome occurs when a TCP implementation sends many very small segments, instead of waiting to collect enough data to fill a larger segment

1.64 Question cm: True or False?

The DEC Bit with a queue length of 1 is used to attempt to optimise the power of the network

1.65 Question cn: True or False?

A significant routing problem is how to make it scale to billions of end nodes

1.66 Question co: True or False?

Source-based Congestion Avoidance reduces the congestion window slightly whenever the RTT increases above the average RTT

1.67 Question cp: True or False?

Randomised Early Detection (RED) drops, with a fixed probability, each arriving packet

1.68 Question cq: True or False?

Source Specific Multicast offers improved one-to-many multicast support for IP

1.69 Question cr: True or False?

The Internet's topology in the early 1990s was a full-mesh network

1.70 Question cs: True or False?

TCP is packet-oriented

1.71 Question ct: True or False?

The TCP Slow Start algorithm is triggered if the TCP sliding window is exhausted, and a collected ACK advances the sliding window, thus allowing data to again begin to be sent

1.72 Question cu: True or False?

Network resource allocation can be either router-centric or host-centric, or both

1.73 Question cv: True or False?

Flowspec solves the problem where multiple variable bit-rate services require less bandwidth than is available on average, but can transiently require more bandwidth than is available

1.74 Question cw: True or False?

Whenever a congestion window's worth of data has been acknowledged, the TCP congestion protcol will add one packet's worth of bytes to the congestion window size

1.75 Question cx: True or False?

Soft-state of network flows is required to help routers handle traffic from the flow