Computer Networks 2021 Quiz 2

FAN: hang0013

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?

The packets exchanged by TCP peers are called segments

1.2 Question ac: True or False?

To ensure scalability, IPv6 removed IPv4's support for mobility

1.3 Question ad: True or False?

Jain's Fairness Index is a commonly used approach to assess the fairness of a congestion control algorithm

1.4 Question ae: True or False?

Transit traffic is traffic that transits through an Autonomous System to reach a destination in another Autonomous System

1.5 Question af: True or False?

"Integrated Services" is a fine-grained quality-of-service approach

1.6 Question ag: 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

1.7 Question ah: True or False?

Congestion control and resource allocation can be viewed as different perspectives of the same problem

1.8 Question ai: True or False?

If the RESET flag in a TCP packet is set, the sender has become confused

1.9 Question aj: True or False?

The network layer is responsible for ensuring that each message is received only once

1.10 Question ak: True or False?

Rate-based networking approaches seek to limit data transmission to a particular data rate, based on an feed-back of the data rate that the network and/or receiver can handle.

1.11 Question al: True or False?

Randomised Early Detection (RED) drops packets with probability (MaxThreshold - MinThreshold)

1.12 Question am: True or False?

An example of many-to-many multicast would be radio station broadcast

1.13 Question an: True or False?

Mobile IP avoids the need for tunnels or care-of addresses to deliver packets to mobile nodes

1.14 Question ao: True or False?

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

1.15 Question ap: True or False?

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

1.16 Question aq: True or False?

The TCP congestion control protocol uses additive increase and multiplicative decrease

1.17 Question ar: True or False?

Fair Queuing performs bit-by-bit interleaving of packets to ensure fair allocation of network bandwidth

1.18 Question as: True or False?

Each Autonomous System should contain only a single router

1.19 Question at: True or False?

It is common for service providers that mainly provide service to consumers to connect to peering points to access the internet backboke

1.20 Question au: True or False?

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

1.21 Question av: True or False?

Voice, video and remote control are examples of network applications where Quality-of-Service should work to minimise latency

1.22 Question aw: True or False?

Packet Scheduling is typically the mechanism by which Quality-of-Service policies are put into effect

1.23 Question ax: True or False?

MPLS provides traffic engineering facilities to the Internet

1.24 Question ay: True or False?

Multiple priority queues can be used to make FIFO queuing more flexible

1.25 Question az: True or False?

Guaranteed-Service in RSVP means that the network should guarantee some maximum delay for any packet to be delivered

1.26 Question ba: True or False?

The goal of inter-domain routing is to find loop-free routes between nodes

1.27 Question bb: True or False?

Source-based Congestion Avoidance watch for some sign of growing queue lengths in the network path

1.28 Question bc: True or False?

Distance-Vector Multicast forwards received multicast packets received from any router on all outgoing links

1.29 Question bd: True or False?

Queuing disciplines in network elements have no impact on congestion: The problem is that there are too many packets to be sent

1.30 Question be: 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

1.31 Question bf: True or False?

Flowspec can use a Token Bucket Filter to enforce average bandwidth allocations, while still allowing for brief bursts of higher data rates

1.32 Question bg: True or False?

Nagle's Algorithm uses received ACKs as implicit timeouts to trigger flushing any data waiting to be sent

1.33 Question bh: True or False?

Multicast allows a sender to send only one packet, and have it be received my multiple recipients

1.34 Question bi: True or False?

The TSpec of a flow is easier to define correctly than the RSpec

1.35 Question bj: True or False?

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

1.36 Question bk: True or False?

Whenever the loss of a packet is detected, the TCP congestion control protocol will halve the congestion window size, but never reducing it below one full packet's worth of data

1.37 Question bl: True or False?

Source Specific Multicast is used to specify the kind of content that a host wishes to receive from a particular multicast node

1.38 Question bm: 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

1.39 Question bn: True or False?

The DEC Bit is a mechanism for Congestion Avoidance that works by setting a congestion indication bit in packets that arrive when network queues are full, i.e., congested

1.40 Question bo: True or False?

Unicast forwarding table collectively specify a set of paths

1.41 Question bp: True or False?

Neither TCP nor UDP is ideally suited to the needs of Remote Procedure Call (RPC)

1.42 Question bq: True or False?

Both IPv4 and IPv6 support multicast

1.43 Question br: 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

1.44 Question bs: True or False?

Route Propagation refers to the movement of user data over existing routes

1.45 Question bt: True or False?

Multicast in IP is structured as a one-to-many system, and extensions must be used to implement many-to-many multicast

1.46 Question bu: True or False?

The TCP acknowledgement field is at byte offset 8 in the TCP header

1.47 Question bv: True or False?

Quality-of-Service implies that some packets will be treated differently to others

1.48 Question bw: True or False?

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

1.49 Question bx: True or False?

TCP must be able to handle widely varying Round-Trip Times on networks

1.50 Question by: True or False?

Exterior Gateway Protocol was limited in that it required a tree-like topology

1.51 Question bz: True or False?

Border Gateway Protocol advertises partial paths that can be assembled to create complete paths to reach given Autonomous Systems

1.52 Question ca: True or False?

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

1.53 Question cb: True or False?

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

1.54 Question cc: True or False?

Autonomous System numbers are 16-bit numbers allocated by a central authority

1.55 Question cd: True or False?

Reverse Path Broadcast is used to prune networks that contain no members in a given multicast group

1.56 Question ce: True or False?

Packet loss is a problem that equally impacts on all real-time applications

1.57 Question cf: True or False?

To minimise latency, TCP always sends bytes of data as soon as they have been received from an application.

1.58 Question cg: True or False?

UDP provides a simple demultiplexer to support end-to-end communications

1.59 Question ch: True or False?

The UDP protocol demultiplexes packets arriving at a host into separate queues for each application

1.60 Question ci: True or False?

End-to-end protocols solve the challenge of how to turn process-to-process communications into host-to-host communications

1.61 Question cj: True or False?

When too many packets are contending for the same link, queues overflow and packets get dropped, resulting in congestion

1.62 Question ck: True or False?

Randomised Early Detection (RED) is a congestion avoidance algorithm, similar to DECBit

1.63 Question cl: True or False?

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

1.64 Question cm: True or False?

The TSpec of a Flowspec describes a network flow's traffic characteristcs

1.65 Question cn: True or False?

TCP Fast Recovery uses the Fast Start mechanism instead of the Slow Start mechanism whenever the Fast Retransmit mechanism detects congestion

1.66 Question co: 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

1.67 Question cp: True or False?

Care-of addresses can be used to help avoid inefficient routing to mobile devices

1.68 Question cq: True or False?

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

1.69 Question cr: True or False?

The congestion control protocol of TCP communicates the congestion window by setting the advertised window and flags in the TCP header to indicate that the value is for the congestion window

1.70 Question cs: True or False?

Allocating network resources with sufficient precision to avoid congestion is the most common approach to congestion avoidance

1.71 Question ct: True or False?

UDP offers more services than TCP

1.72 Question cu: True or False?

"Integrated Services" is a quality-of-service scheme for packet switched IP networks. It does not support reservations

1.73 Question cv: True or False?

Border Gateways exchange route and path information between Autonomous Systems

1.74 Question cw: True or False?

In a reservation-based system, each router allocates enough resources for a request. If the request cannot be met, the router rejects the reservation.

1.75 Question cx: True or False?

Merriton's Algorithm is typically used to solve the fairness of resource allocation in networks