

CSC138-06 Final Exam

I) Application
Transport
Network
Link
Physical

- 2) Non-persistent HTTP sends one object at a time over TCP.
Persistent HTTP is able to send multiple objects over a single TCP connection.
- 3) TCP is a reliable transport that guarantees delivery of an application layer messages to the destination and has flow control.
UDP is unreliable and doesn't provide flow-control or congestion control like TCP.
- 4) "DDos" stands for
Distributed Denial-of-Service

5) when sender receives 3 duplicate Pg Z
ACKs

6) Application - HTTP, DNS,
Transport - TCP, UDP,
Network - IP, DHCP
Link - TDMA
Physical -

7) HTTP Port : 80, 8080
SMTP Port : 161

8) Dash Video Streaming is where the server divides video file into multiple chunks, encode at multiple rates, and provides URLs for different chunks. The Client checks estimate of server to client bandwidth frequently and is able to determine when to request a chunk and encode rate.

9) An IP address contains 32 bits
the "2I" is the relative network size
there are 2I bits

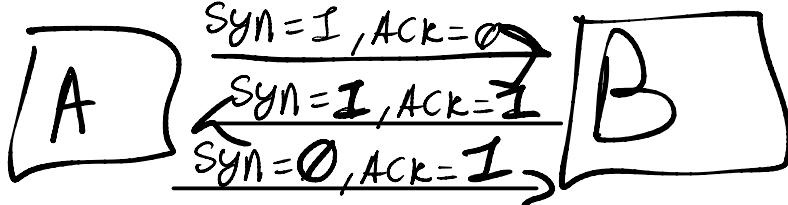
10) MAC Address has 48 bits
(6 bytes) and are not portable
because they are fixed to the
device in network

11) Routing tables are for IP addresses
switching tables are for MAC addresses
IP is switchable

12) ALOHA can transmit data from
any station with any time slot

- Pure ALOHA can transmit data from any station where time is $2 \times T_t$
- CSMA/CD is used for Ethernet
It detects for when multiple devices for collision

13)



P4

Step 1: $\text{SYN} = 1, \text{ACK} = 0$

2:

I,

I

3:

0

I

14) To prevent middle attack you can use private-public encryption

To prevent playback attack you can create a session key for both source sender & receiver

15) Bob can check what the Hash of "M" is to verify it has not been modified.

Part 2

- | | | | |
|------|------|------|-------|
| 1) D | 4) C | 7) B | 10) B |
| 2) B | 5) C | 8) | |
| 3) A | 6) A | 9) A | |

P4

Part 3 Long Answer P5

$$P=5 \quad \& \quad q=11$$

$$\begin{aligned}1.1) \quad n &= P \times q \\&= 5 \times 11 \\&= 55\end{aligned}$$

$$\begin{aligned}\varphi = (P-1)(q-1) \\&= (5-1)(11-1) \\&= 4 \times 10 \\&= 40\end{aligned}$$

$$N=55 \quad \& \quad \varphi=40$$

1.2) $e=3$, $e < n$ for there
are no common factors w/ φ

$$e < n$$

1.3) find d , $de \equiv 1 \pmod{\varphi}$, $d < 160$

QUESTION 2 - Long answer

2.1) Source IP: 111.111.111.111
destination IP: 222.222.222.222

Source MAC: 74-_____ -55

destination MAC: E6-_____ -4B

2.2) Source & Dest MAC addr. updated

2.3) Src IP Addr: 111._____.111

dest IP Addr: 222._____.222

Src MAC: 1A ____ 9B

dest MAC: 49 ____ 2A

2.4) When the packet arrives at
B the header packet is removed
from

3) Slow Start: $[1, 3] \cup [7, 9]$

Congestion Avoidance: $[4, 6] \cup$

$[10, 23] \cup [24, 31] \cup$

$[33, 40]$

Fast Recovery: $24, 32$

Time out Loss: 6

Triple duplicate ACK: $23, 31,$

SSthresh: $(1, 6)$ change $(6, 23)$
 Change $(23, 40)$

Pf

4) CRC: 4-Bit $G = 1001$

Payload (D) = 10011000

$R = 3$

10001

$$\begin{array}{r} 1001 \\ \hline 1001) 10011000 \\ 1001 \downarrow \downarrow \downarrow \\ \hline 0000 \end{array}$$

10001

$$\begin{array}{r} 1000 \\ \hline 1001 \end{array}$$
$$\begin{array}{r} 001 \end{array}$$

Therefore, $R = 001$