ETE Exam

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4b) 10 Mb can be sent in 1 second

⇒ 1Mb ⇒ 1/10s

∴ 20.5 MB ⇒ $\frac{20.5 \times 8}{10}$ = 16.4 sec

Rate of transmission is 10Mbps ⇒ 10Mb in 1 sec.

∴ In 16.4s network can transmit 16.4 × 10 = 164Mb.

Data to be transmitted = 164Mb

Data transmitted = 164 Mb

∴ Data saved in bucket = 0Mb

4a)

i) The value of ~~data~~ hardware type is 0x0.001 ie 1 in decimal.

∴ Ethernet protocol.

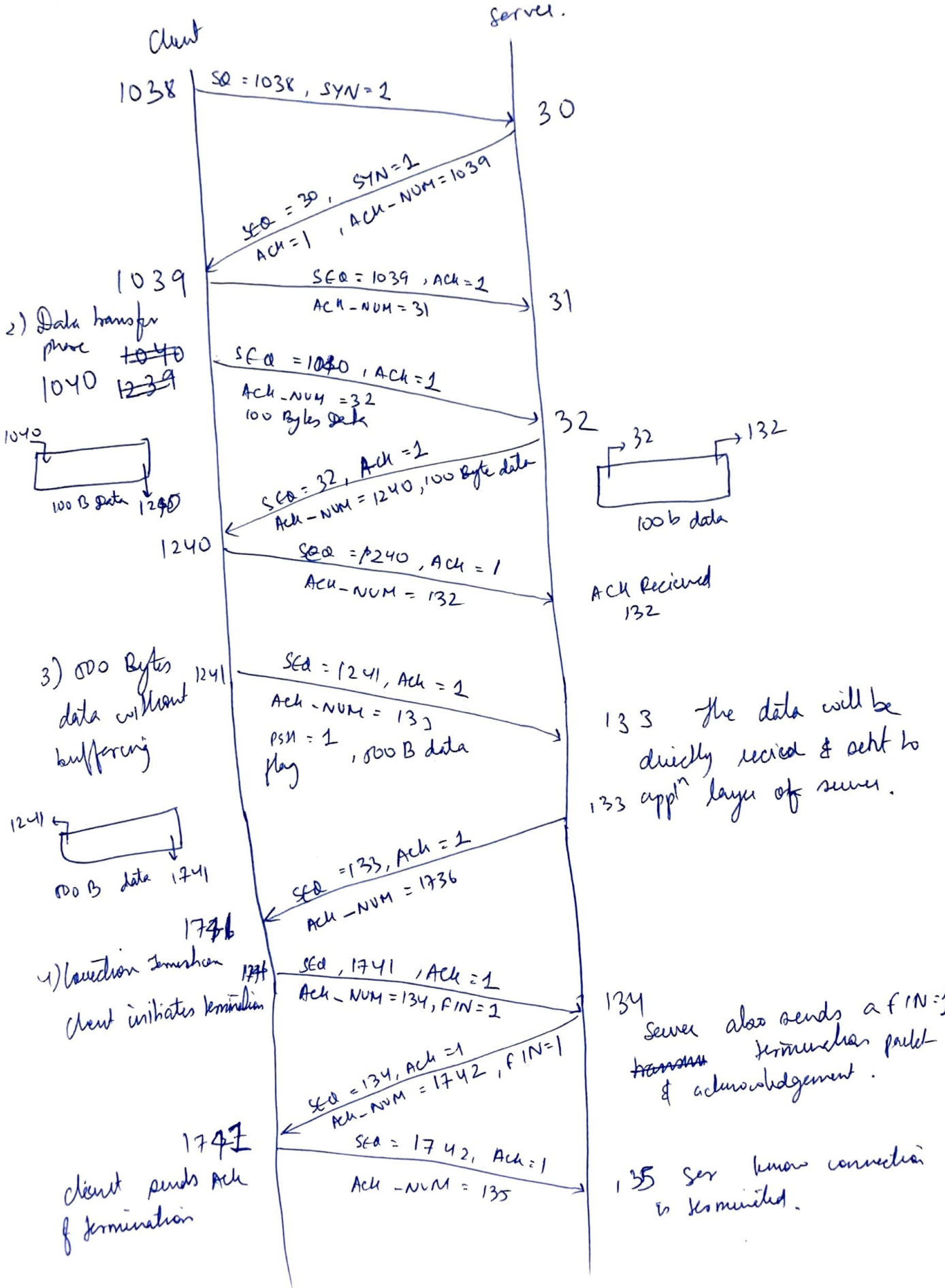
0x0001	0x0800
0x06 | 0x04	0x0002
0xA46EF45983AB	
0xAC172B1B	
0xB2345102210	
0xAC172B15	

Preamble	0x 82345	0xA46EF	0x080 6	Data	RC
ASFO	5102210	45983AB			

5a) Initial sequence number on client side = ~~1038~~ 1038

Initial sequence number on server side = 30.

1) Connection establishment client.



5b) Offset val = ~~800~~ 680

HLEN = 5

Total length field = 900

~~Total length~~ Mbit = 0.

M = 0 means packet is last among fragments of argument packet.

HLEN = 5

Header length is 32 ~~bit~~ bit word = 5x4 = 20

Total length field values = 900

Total length includes packet & header.

Packet length - Header length = 900 - 20 = 880

Last byte address = 680(8) + 880 - 1 (No. starts from 0)

= 5200 + 879

= 6079

1A) 120.70.0.0/16

First office = 240 dept each needs 128 Addr.

∴ Total ≥ 256 (closest to 24) × 128 = 32768 Addr.

$\log_2^{128} = 7$

32 − 7 = 25 N10

first ip = 120.70.0.0/25 to 120.70.0.127/25
120.70.0.128/25 to 120.700.255/25.

last ip = 120.70.119.128/25 to 120.70.119.225/25

Subnet mask = 255.255.255.128

No. of unused Addrs = (256 × 128) − (240 × 128) = 128 × 16

= 2048

Second office = 260 → closest to (512)

Total = 512 × 16 = 8192

$\log_2^{16} = 6$.

first customer = 120.70.128.0/28 to 120.70.128.15/28
120.70.128.16/28 to 120.70.128.31/28

for 268 m = 120.70.43.240/28 to 120.70.143.255/28

Totalk unused Addr = (512 − 260) × 16 → 4032

Subnet mask = 255.255.255.240.

1000 office → 4 Add. Each
↳ closest to 1024.

Total = 1024 x 4 = 4096

~~Total = 1024*4 =~~

$\log_2 4 \Rightarrow 2$

first customer = 120.70.160.0/30 to 120.70.160.3/30

last customer = 120.70.176.4/30 to 120.70.175.7/30

Subnet mask = 255.255.255.252

Unused addr = 2*4 = 96

1b) Given UDP Header.

0 2 2 F 6 F F 2 1 1 2 C 2 3 2 6

UDP header contains

First four → ~~destination port~~ . source port
Second four → ~~length of d~~ destination port.
next four → length of data
last four → checksum

Hence
source port → 022F → tcp/udp port no.
destination port → 6FF2 → random.

as here given source port is defined & is of tcp/udp that is 559 (in hex) & destination port is random port.

∴ ~~here packet is from bob (client) to alice (server)~~

∴ Packet is from ~~client~~ server (Alice) to Bob (Client)

3a) Given dump of UDP header in hexadecimal format

06 32 00 0D 00 1C E2 17

a) The source port is the first four hexadecimal digits ie 06 32
if we convert hexadecimal to decimal we get 1586

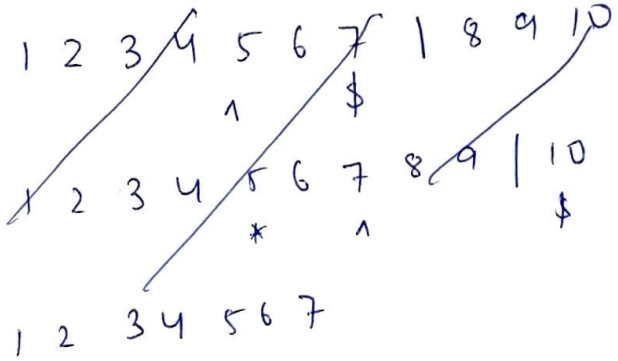
Destination port is second 4 hexadecimal digits 00 0D
converting to hexadecimal → 13

b) Total length including header & data. It is a 16 bit field.
The third four hexadecimal digits 001C. if we convert here
to decimal, we get 16 define the length of whole UDP packet as 2

c) Length of data. Since the header is 8 bytes, the data length is
28 - 8 = 20 bytes

d) The IP header is minimum 20 bytes, which gives the max
payload of 65515 (Total ip frame length = 65535 & subtracting
ip header we get 65515) bytes. To fit UDP via frame in this
header of 8 bytes we get dat 65515 - 8 = 65507 bytes

3b) 1 2 3 4 5 6 7 1 8 9 10 (packet no. 5 lost)



3b) Go back N where N = ?

Every 5th packet is lost & we have send total 10 packets

current window

1 2 3 4 [5 6 7] | 8 9 10

Packet 5 lost so retransmitted current window

1 2 3 4 5 6 7 5 6 [7 8 9] | 10

Packet 7 lost so retransmitted current window

1 2 3 4 5 6 7 5 6 7 8 9 7 [8 9 10]

Packet 9 lost so retransmitted

1 2 3 4 5 6 7 5 6 7 8 9 7 8 9 10 9 10

Total number of transmissions = 18

The retransmitted packets are 5, 7 & 9, 6, 8, 10