

Ayush

K17-3867

(F)

①

QUESTION 1

Roll no: 3867

$$L = (7 \bmod 10) + 1 = 8 \text{ Mbits}$$

$$R_1 = (6 \bmod 10) + 1 = 7 \text{ Mbps}$$

$$R_2 = (8 \bmod 10) + 1 = 9 \text{ Mbps}$$

$$R_3 = (3 \bmod 10) + 1 = 4 \text{ Mbps}$$

$$d_1 = (1 \bmod 10) + 1 = 2 \text{ km}$$

$$d_2 = (7 \bmod 10) + 1 = 8 \text{ km}$$

$$d_3 = (3 \bmod 10) + 1 = 4 \text{ km}$$

$$\text{propagation delay} = T_{\text{prop}} = T_{\text{queue}} = (7 \bmod 10) + 1 = 8 \mu\text{s}$$

$$T_{Q_1} = (1 \bmod 10) + 1 = 2 \mu\text{s}$$

$$T_{Q_2} = (7 \bmod 10) + 1 = 8 \mu\text{s}$$

$$T_{Q_3} = (3 \bmod 10) + 1 = 4 \mu\text{s}$$

$$T_{Q_4} = (8 \bmod 10) + 1 = 9 \mu\text{s}$$

$$s = 3 \times 10^8 \text{ m/s}$$

Transition Delay:

$$T_{\text{delay A-X}} = \frac{L}{R_1} = \frac{8 \times 10^6}{7 \times 10^6} = 1.142$$

$$T_{\text{delay X-Y}} = \frac{L}{R_2} = \frac{8 \times 10^6}{9 \times 10^6} = 0.88$$

$$T_{\text{delay Y-B}} = \frac{L}{R_3} = \frac{8 \times 10^6}{4 \times 10^6} = 2$$

$$T_{\text{delay}} = 1.142 + 0.88 + 2 = 4.022$$

$$\text{propagation delay} = d/s = \frac{d_1 + d_2 + d_3}{s} = \frac{(2+8+4) \times 10^3}{3 \times 10^8} = 4.66 \times 10^{-5}$$

Name - Aysha Ausaf
Roll No - 77C-3867 (F)
Course - CN
Aysha

(2)

QUESTION 2 (A)

- (i) Mr. Bachchan's client can use HTTP as application layer protocol.
- (ii) The message formed by Mr. Bachchan client application should use to send data to server is request message.
- (iii) According to scenario :

PUT	HTTP / 1.1
DELETE	HTTP / 1.1
GET	HTTP / 1.1

- (iv) Example messages for proposed sol are :

GET / image1.jpeg HTTP / 1.1

Host : www.bachchan.com

connection : close

DELETE / image1.jpeg HTTP / 1.1

Host : www.bachchan.com

PUT / image2.jpeg HTTP / 1.1

Host : www.bachchan.com

- (v) The best version of proposed protocol is HTTP / 1.1.

Name - Ayesh Ausef
Roll no - 17K-3867 (F)

Ayesh

(3)

QUESTION 2 (B)

- (i) The communication is initiated by client to the server.
The server waits to be connected and once connection is established,
the programs running on host communicate via interprocess.
Internet provides 2 protocol, UDP & TCP for communication. so TCP
might be used for reliable communication.
- (ii) Client server model is used.
- (iii) Sockets provide communication between two application.
- (iv) The identifications that are required are:
① IP address ② Port number.

Ayisha
K17-3867
(F)

(ii)

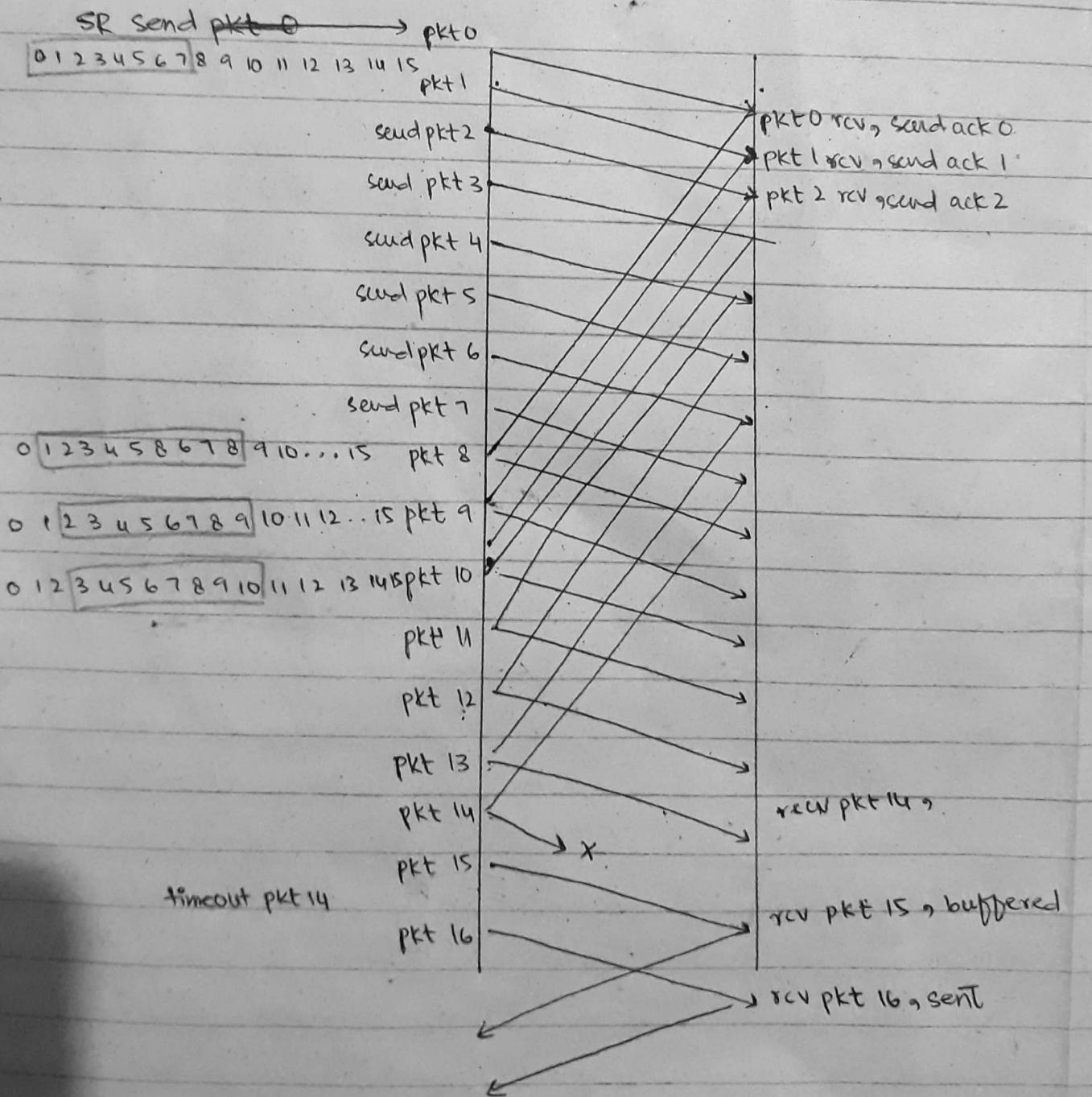
QUESTION 3

(i)

$$(67 \bmod 10) + 1 = 8$$

window size = 8

sequence = 0 - 15

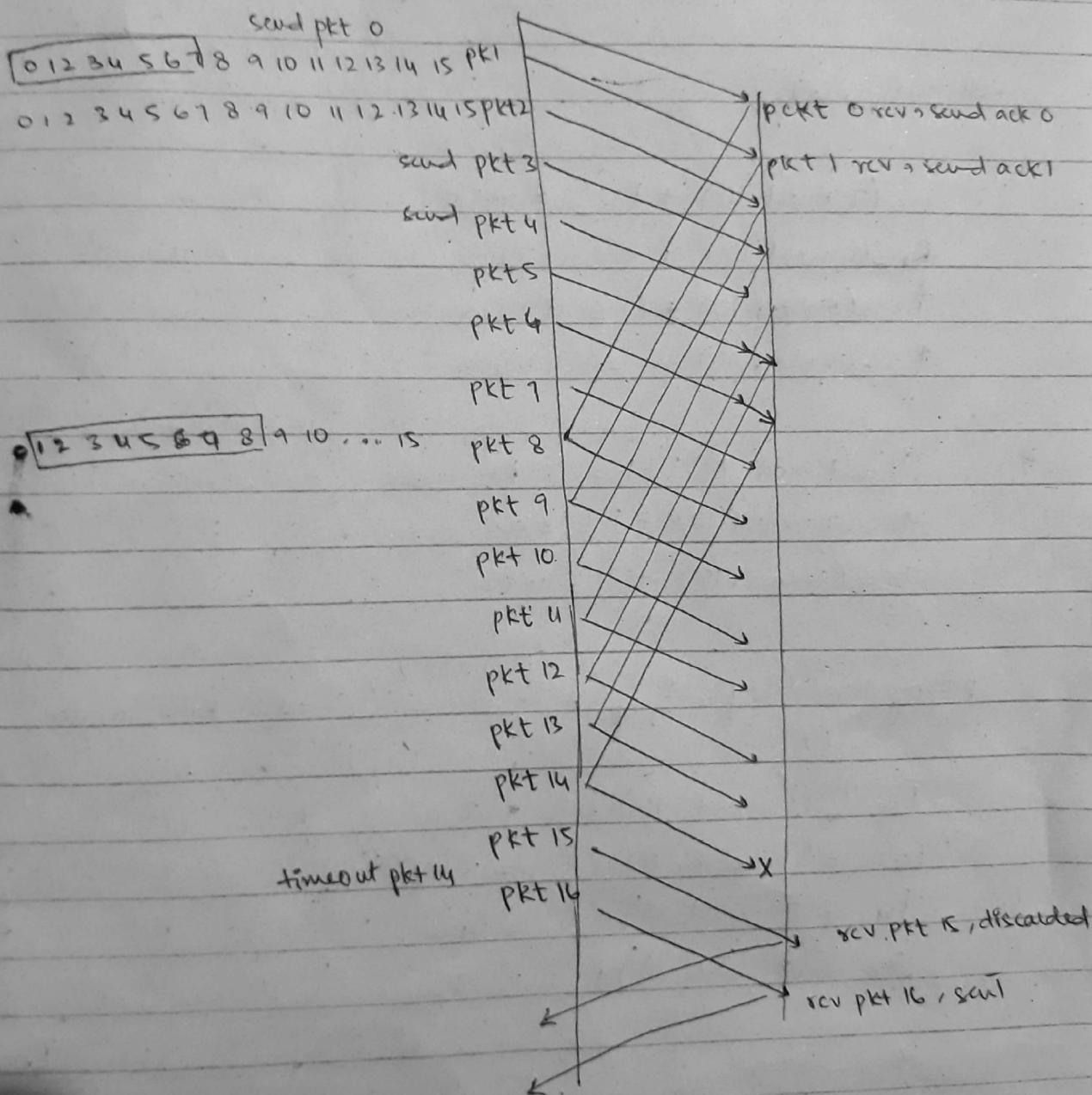


Name - Ayesha Afusaf
Roll No - 17E-3867
Course - CN
Ayesha

ROUND - K17-3867 (F)

(5)

GBN
(ii) ~~GBSF~~



buffered

Name - Ayesha Ansaf
Roll no - 17K-3867 (F)

Course - CN

Ayesha

(b)

QUESTION 5

tcp will be (A) Subnet Mask Network Address Next Hop Interface

converted.

messages:

255.255.252.0 10.100.16.0/22 10.100.16.2 m1

ages:

255.255.255.128 192.168.65.128/25 192.168.65.135 m0

255.255.255.0 10.100.22.3/24 10.100.22.3 m3

255.255.255.192 192.168.65.194/26 192.168.64.194 m2

the controller

-

Other

192.168.64.194 m2

used by

(B) It will route to interface m3.

(C) It will route to interface m3.

(D) It will route to interface m2.

K17-3867

Ayasha
(F)

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QUESTION 6

- (A) The router will take 10 sec to start. It will further take few msec for signals to reach to other devices & then the routing-table will be computed.
- (B) R1 - R2 link will carry the most traffic.
- (C) R1 will give itself the maximum cost. R1 will be removed from the path automatically & take other paths causing less traffic in that ~~path~~ link.

Name - Ayeshia Ausef
Roll no - K17-3867 (F)
course - CN

(Q)

Ayeshia

Name _____
Roll no _____
Course _____

QUESTION 7(A)

N	D(A)	D(B)	D(C)	D(D)	D(E)	D(F)	D(G)
P(A)	P(B)	P(C)	P(D)	P(E)	P(F)	P(G)	

Z	2,0	5,0	4,0	∞	∞	∞	∞
Z A	-	4,A	4,0	9,A	∞	14,A	∞
Z AB	-	-	4,0	8,B	7,B	14,A	∞
Z ABC	-	-	-	8,B	7,B	14,A	∞
Z ABCE	-	-	-	8,B	-	14,A	14,E
Z ABCED	-	-	-	-	-	14,A	13,D
Z ABCEDG	-	-	-	-	-	14,A	-

QUESTION 7(B)

Z-A	Z-B	Z-C	Z-D	Z-E	Z-F	Z-G
ZA	ZAB	ZC	ZABD	ZABE	ZAF	ZABDG

↑ the working from Z to A & G.

Name - Ayesha Arshaf
Roll no - MTC-3867 (F)

Course - CN

Ayesha

(13)

QUESTION 8 (A)

Following are 3 layers:

① Interface layer:

Interface layer helps the controller to interact with network control application by using the north bound application interface.

② Communication layer

It helps the controller to interact with controlled devices through events like messages. This is implemented by southbound interface like openflow.

③ Network Wide State Management layer

This layer contains the updated info about the state of network's host & links etc. so that control plane can determine flow tables for various devices.

QUESTION 8 (B)

The app will be implemented in communication layer. It will make use of protocol like openflow which will be used to transfer the info b/w the controller & device. Devices will face local events & communicate them to controller with help of using messages by implementing southbound southbound interface.

QUESTION 8(c)

Openflow protocol operates b/w the switches & controller. TCP will be used to communicate messages, which may be encrypted. (A)

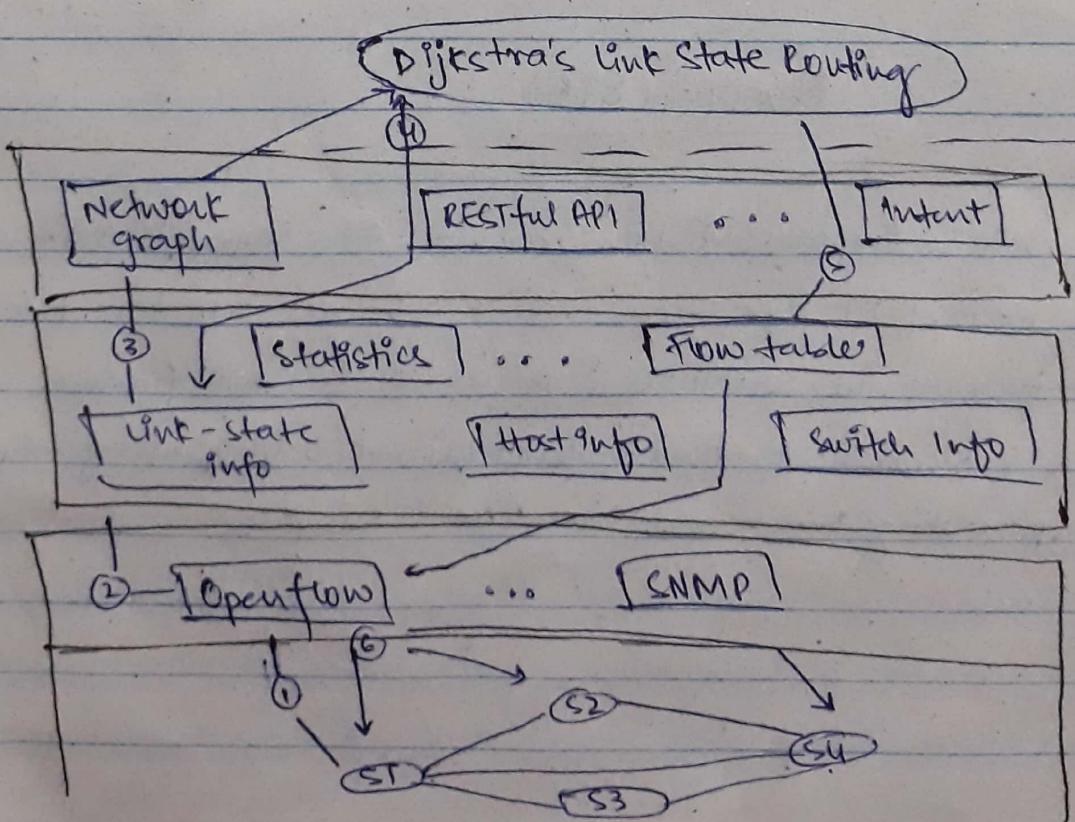
The controller interacts with switch using following messages:
configure, modify state.

On other hand, switches interact with following messages:
packet in, flow removed, port status.

QUESTION 8(D)

If certain switch faces link failure, it modifies the controller by port status message.

The controller update the link status info which is used by routing algo in network.



Name - Aysha Arosef
Roll no - K17-3867 (F)

(11)

Aysha

QUESTION 9(A)

Three techniques are available for correction & error detection:

① Parity check

It is used for the detection of a single bit parity. For two dimensional, bit parity ~~is~~ is used for detection & single bit error.

② Check sum Method

It is used only at transport layer and used to detect error by adding 16 bit nos & taking 1's complement.

③ Cyclic Redundancy check (CRC)

It is used in data link layer only & is more efficient & better error-detection method.

Reason :

Error detection technique on data link layer is used because errors might still be left after checksum ~~method~~ method is used at transport layer.

Name - Ayesha Ausab
Roll no - 7K-3867 (F)
Course - CN
Ayesha

(12)

QUESTION 9(B)

1902 → DOB

0001 1001 0000 0010

8421

1101] 0001 1000

0000

0011 0000

0000 :

011 0000

0000

110 000

1101

00100

0000

0100

0000

100

→ ans

Name - Ayesha Ansaf
Roll Id - K71-3867 (F)

Course - Computer Networking

Ayesha

(13)

QUESTION 10(A)

(i) When address is not in switch's forwarding table, frame is treated like broadcast frame & sent to all hosts on network called flooding

(ii)

Switch Table

VLAN	MAC Address	Port	Port
1	ee:2c:bd:8f:1b:a5		1
1	eb:87:3e9:10:99:a1		2
1	23:4e:19:4b:23:cc		3
1	cb:58:68:2c:4c:04		4

(iii) No, because switch only maintains a table that tells which MAC address of host is reachable via which port or interface.

(W)

QUESTION 10 (B)

HOST A

IP : 176.35.196.2

MAC : ee : 2c : bd : 8f : 1b : a5

Therefore, A sends ARP request to B when it knows that B's IP is 176.36.100.2, The MAC address that it gets in return would be 90 : c0 : d6 : cb : c9 : e8 which is router's MAC address.

As the router will forward the packets to remote host, knowing the destination IP (176.36.100.2) of PC B.

→ 'A' host creates link layer frame with R's MAC address as destination, frame contain A to B IP datagram.

Pledge

I affirm I have not cheated.