Computer Networks
C-2 Examination
B. Tech. 4 th Semester (IT Section A)
IIIT-Allahabad
Section A

Duration : 1Hr 50Mins
Marks : 30
Attempt all the questions.

1. We have 5 routers labeled A-E. Suppose we have the forwarding tables shown below after RIP is stable. Let all links have cost 1. (**Marks: 2+2+2**)

Forwarding Table for A

Destination	Cost	Next Hop
A	0	-
B	1	B
C	2	B
D	1	D
E	2	D

Forwarding Table for B

Destination	Cost	Next Hop
A	1	A
B	0	-
C	1	C
D	1	D
E	1	E

Forwarding Table for C

Destination	Cost	Next Hop
A	2	B
B	1	B
C	0	-
D	2	E
E	1	E

Forwarding Table for D

Destination	Cost	Next Hop
A	1	A
B	1	B
C	2	B
D	0	-
E	1	E

Forwarding Table for E

Destination	Cost	Next Hop
A	2	D
B	1	B
C	1	C
D	1	D
E	0	-

(a) If a message is originated from A and a destination is E. Which path does it take?
(b) If a message is originated from C and a destination is D. Which path does it take?
(c) Give a diagram of a possible network consistent with these tables.

2. An IP datagram is carrying a TCP segment destined for address 130.14.16.17/16. The destination port address is corrupted, and it arrives at destination 130.14.16.19/16. How does the receiving TCP react to this error? (**Marks: 2**)

3. What is SYN Flooding Attack? Is TCP susceptible to SYN flooding attack? How can we fix this problem? (**Marks: 1+1+1**)

4. Draw a state transition diagram for TCP connection establishment, data transfer and connection termination and explain it. (**Marks: 3**)

5. The following is part of a TCP header dump (contents) in hexadecimal format.
   E293 0017 00000001 00000000 5002 07FF... (**Marks: 7**)
   a. What is the source port number?
   b. What is the destination port number?
   c. What is the sequence number?
   d. What is the acknowledgment number?
   e. What is the length of the header?
   f. What is the type of the segment?
   g. What is the window size?

6. Answer the following:
   a. Assume a TCP server expects to receive byte 2001, but it receives a segment with sequence number 2200. What is the reaction of the TCP server to this event? Can you justify the reaction? **(Marks: 2)**
   b. Assume a TCP client expects to receive byte 2001, but it receives a segment with sequence number 1201. What is the reaction of the TCP client to this event? Can you justify the reaction? **(Marks: 2)**

7. Write pseudo code of path vector routing algorithm. Assume that A, B, C, D, and E in the following diagram are autonomous systems (ASs). Find the path vector for each AS using path vector routing algorithm. Assume that the best path in this case is the path which passes through the shorter list of ASs. Also assume that the algorithm first initializes each AS and then is applied, one at a time, to each node respectively (A, B, C, D, E). Show that the process converges and all ASs will have their stable path vectors. (**Marks: 5**)