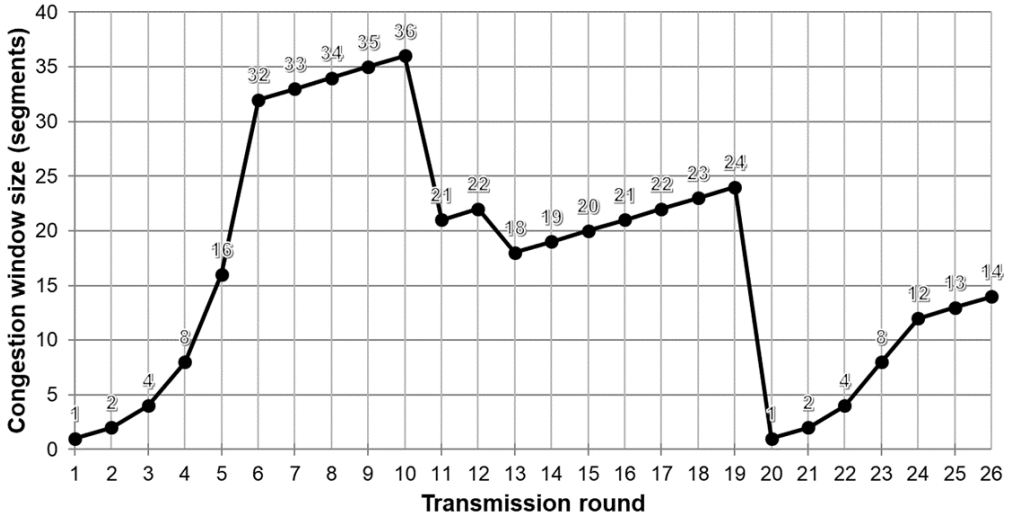
Assuming *TCP Reno* is in use.

1. Identify the intervals of time when TCP *slow start* are operating. (6%)
2. Identify the interval of time when TCP *fast recovery* is operating. (4%)
3. At the 10th transmission round, is segment loss detected by a *triple duplicate ACK* or by a *timeout*? (5%)
4. At the 19th transmission round, is segment loss detected by a *triple duplicate ACK* or by a *timeout*? (5%)
5. What is the value of ssthresh at the 18th transmission round? (5%)
6. What happened at the 12th transmission round? (5%)
7. Assume a packet loss is detected by a *triple duplicate ACK* at the 26th round. What are the *congestion window size* and ssthresh at the 27th round? (10%)

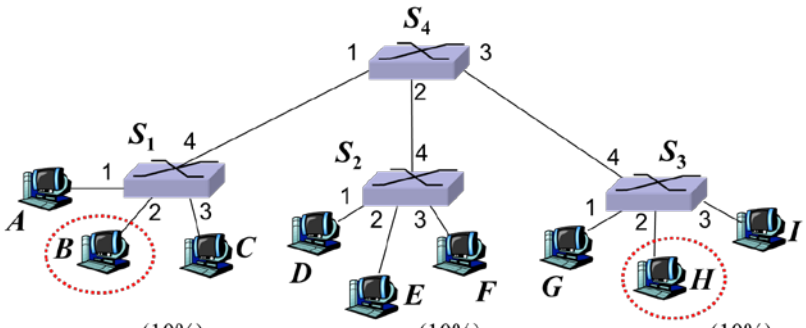


Given a local forwarding table in the table below.

(a) What is the output link for an IP datagram with DA 10.1.1.33? (5%)
(b) What is the output link for an IP datagram with DA 10.1.1.100? (5%)
(c) What is the maximum number of IP addresses useable for network interfaces in the subnet of 10.1.1.16/28? (10%)
(d) If the subnet 10.1.1.64/26 is divided into four equal-sized subnets, what are the resulting four subnets? You must show all of them in the form of ***a.b.c.d/x***. (20%)

Destination Subnet	Output Link
10.1.1.0/24	0
10.1.1.16/28	1
10.1.1.64/26	2
otherwise	3

All the switch tables are initially empty. Assume *H* sends a frame to *B*, and then *B* replies to *H*. Show the content of the switch tables after the operations have completed.



(10%)

Switch Table of S_1	
MAC Address	**Interface**

(10%)

Switch Table of S_2	
MAC Address	**Interface**

(10%)

Switch Table of S_3	
MAC Address	**Interface**

(10%)

Switch Table of S_4	
MAC Address	**Interface**