1. Solution:

11 1 0 1

01 1 0 0

10 0 1 0

11 0 1 1

11 0 0 0

5. Solution:

If we divide 10011 into 1010101010 0000, we get 1011011100, with a remainder of R=0100.

6. Solution:

a. we get 1000110000, with a remainder of R=0000.

b. we get 0101010101, with a remainder of R=1111.

c. we get 1011010111, with a remainder of R=1001.

22. Solution:

(i) from A to switch: Source MAC address: 00-00-00-00-00-00

Destination MAC address: 55-55-55-55-55-55

Source IP: 111.111.111.001

Destination IP: 133.333.333.003

(ii) from switch to right router: Source MAC address: 00-00-00-00-00-00

Destination MAC address: 55-55-55-55-55-55

Source IP: 111.111.111.001

Destination IP: 133.333.333.003

(iii) from right router to F: Source MAC address: 88-88-88-88-88-88

Destination MAC address: 99-99-99-99-99-99

Source IP: 111.111.111.001

Destination IP: 133.333.333.003

23. Solution:

If all the 11=9+2 nodes send out data at the maximum possible rate of 100 Mbps, a total aggregate throughput of 11\*100 = 1100 Mbps is possible.