Q1. The router will send the packet to 10.1.5.64/29 because it is the longest subnet mask that matches with the IP address.

i.e

***10.1.5.65***

10 – 0000 1010

1 – 0000 0001

5 – 0000 0101

65– 0100 0001

Where 29bits is the longest subnet mask matches

***10.1.5.64***

10 – 0000 1010

1 – 0000 0001

5 – 0000 0101

64– 0100 0000

Q2. While output 3 and 1 are both viable options it will chose 1 because the subnet mask is longer and while there is longer subnets they do not match.

i.e

***131.23.151.76***

131– 1000 0011

23– 0001 0111

151– 1001 0111

78– 0100 1110

***131.22.0.0***

131 – 1000 0011

22 – 0001 0110

0 – 0000 0000

0 – 0000 0000

Q3.

***192.24.0.0 => D***

192 – 1100 0000

24 – 0001 1000

0 – 0000 0000

0 – 0000 0000

***192.24.12.0 => B***

192 – 1100 0000

24 – 0001 1000

12 – 0000 1100

1. – 0000 0000

***1) 192.24.6.0 => Next Hop is D***

192 – 1100 0000

24 – 0001 1000

6 – 0000 0110

0 – 0000 0000

***2) 192.24.14.32 => Next Hop is B***

192 – 1100 0000

24 – 0001 1000

14 – 0000 1110

32 – 0010 0000

***3) 192.24.54.0 => Next Hop is D***

192 – 1100 0000

24 – 0001 1000

54 – 0011 0110

0 – 0000 0000

Q4.