ITS 413 – QUIZ 3 ANSWERS

First name: _____   Last name: _____

ID: _____   Total Marks: _____

out of 10

Question 1 [3 marks]

    a) Explain a reason why network throughput *may* be higher when using IEEE 802.11 RTS/CTS, as opposed to Basic Access.

Answer

RTS/CTS can reduce the number of collisions, especially in the case of hidden terminals. Less collisions leads to higher throughput.

    b) Explain a reason why network throughput *may* be lower when using IEEE 802.11 RTS/CTS, as opposed to Basic Access.

Answer

RTS/CTS introduces a extra overhead (the RTS and CTS packets) which leads to lower throughput.

Question 2 [7 marks]

Consider the following IP network consisting of 7 routers. Mobile Node MN1 (which implements Mobile IP) is initially in its home network attached to router R1. Correspondent Node CN1 is attached to router R7. If referring to IP addresses, you can refer to the name: e.g. IP address of MN1 is MN1; IP address of R3 is R3.
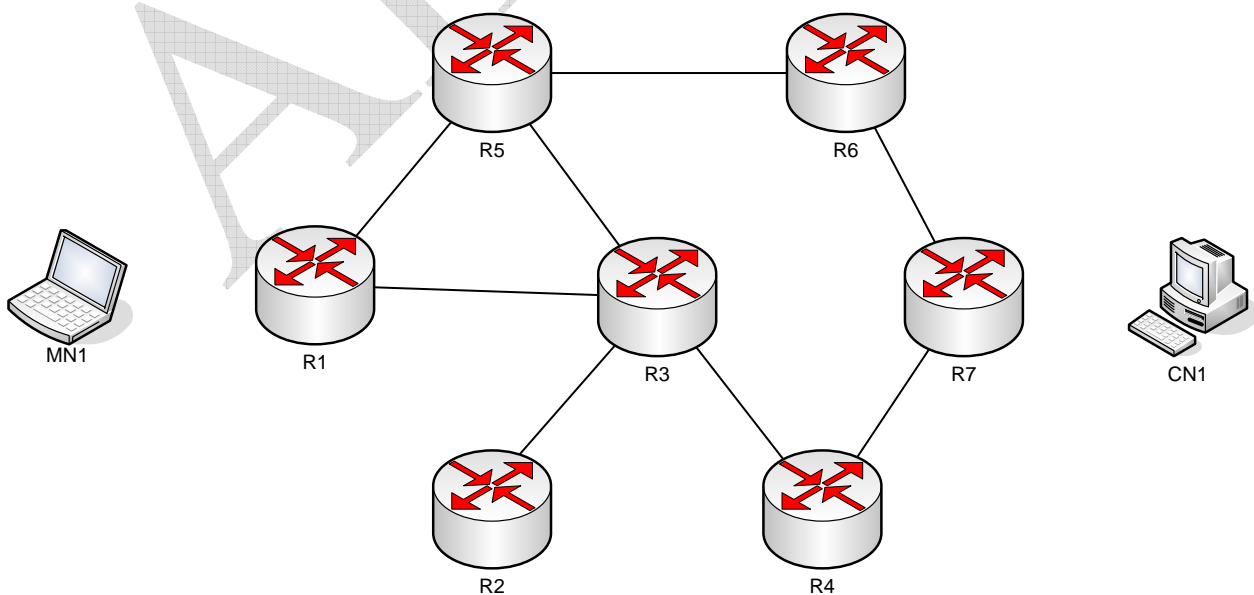
a) If MN1 wants mobile Internet access as it moves from R1 to the access network of R2, where must the following be deployed:

    a. Mobile IP Home Agent?   _R1_____

    b. Mobile IP Foreign Agent?   _R2_____

b) Illustrate on the diagram the 4 messages (including their names) used by Mobile IP to process the handover from R1 to R2. You may redraw MN1.

Answer

The diagram should indicate a Registration Request going from MN1 to FA; Registration Request going from FA to HA; Registration Reply from HA to FA; Registration Reply from FA to MN1.

c) The Home Agent and Foreign Agent each contain tables of information for Mobile IP. Explain what they will contain (with respect to MN1) *after* the handover.

    Home Agent Table

Answer

Contains the Mobility Binding Table: indicates that MN1 is currently has a COA on the network attached to the FA.

    Foreign Agent Table

Answer

Contains the Visitors Table: indicates that MN1 is a visiting node with COA and home agent at router HA.

d) On the diagram below (which is identical to the previous), illustrate the path of a packet from CN1 to MN1 after the handover is complete. You may redraw MN1 and choose any valid path.
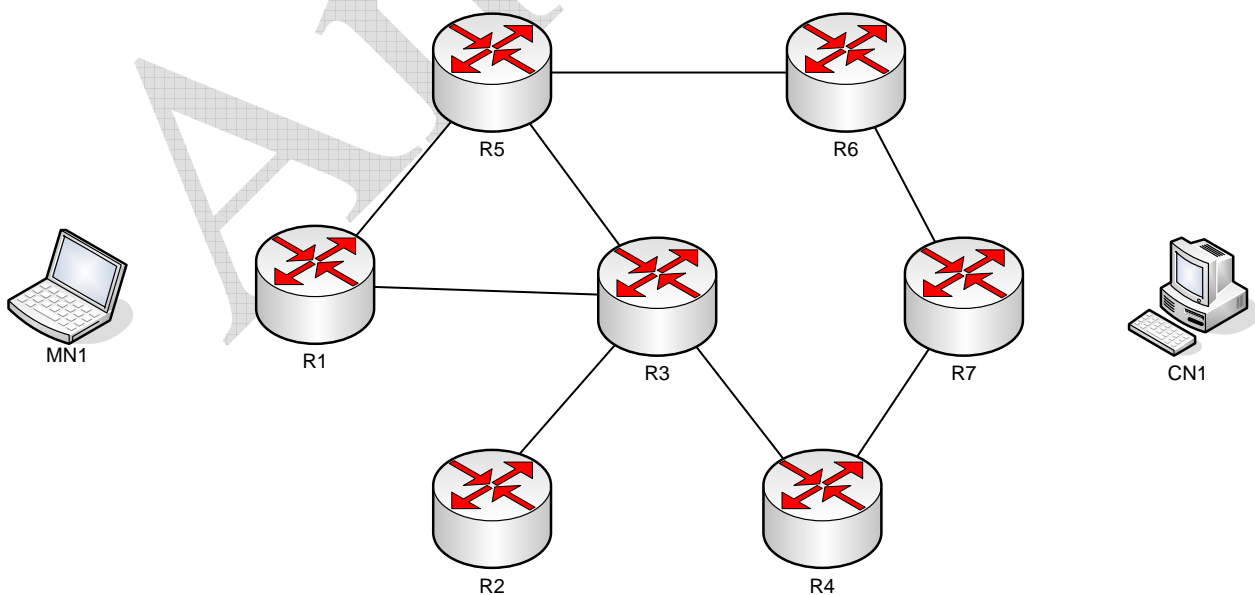
Answer

The diagram should indicate the path going any route from CN1 to HA, and then any route from HA to FA, and then to MN1

e) For the path chosen from part (d), what are the following IP addresses:

    a. Destination IP address of packet forwarded by R7? __MN1_____

    b. Destination IP address of packet received by the FA? __R2_____

    c. Source IP address of packet received by MN1? __CN1_____

    d. Destination IP address of packet sent by FA? __MN1_____