Homework 4 (Module: Home Wi-Fi Security)
Total points = 10 (plus 2 bonus points); Problem c and Problem d has one
bonus point each because they require some extra effort (in addition to what
we discussed in the class room). You can score 12 out of 10.

a. Say you have bought a wireless router R, and you want to use R to set up a Wi-Fi
network for all the users at your home. So, you need to configure the router R
from your computer C. How to physically connect R with C? How to access the
configuration web page of R from C? How do you get the specific URL? How do
you change the admin password of R? Include a diagram which shows the
connection topology including R, C, the modem, and possibly other users’
computers. (2.5 points)

b. How to enable WPA2 option on a home router R? You should check the
configuration page of your home router and give the precise answer for the
specific router. You may include screenshots, if necessary. What credential
another computer D needs to possess to connect to R via WPA2? Give an
example. How does the router R’s administrator securely give the WPA2
credential to D? Give an example. What is WPS? Explain why we should not use
it? (2.5 points)

c. What is NAT? What is a firewall? Why should your home router R work as a NAT
and as a firewall? Explain with a diagram how the NAT works. In which
situations do we need to enable port forwarding in R? If not necessary, how to
disable port forwarding in R? What is DMZ? How to disable the DMZ option in R?
(3.5 points)

d. What is the UPnP option in a router R’s configuration? How to disable it in R’s
configuration? What is the “remote access” option for R? How does it work?
Which IP address of R do you need to use for the remote access? We understand
that remote access is not a secure option. How to disable this option? (3.5
points)