

1.

a) How IEEE WLAN standards 802.11, 802.11a, 802.11b, 802.11g and 802.11n work and how do they differ from each other? Compare standards and write both good and bad things about each of them. Also write everything you know about so-called Super-G (it is also called, for example, Turbo-G, Speedbooster and Afterburner). (6p)

b) What Wi-Fi, WPA, WPA2 and WMM are? How do they work? What benefits do they offer to WLANs? (5p)

2. Write everything you know and understand about your practical assignment. (1. practical assignment of the LAN course, that is mandatory for everyone) (10p)

3.

a) What does Site Survey mean? What are the general areas that Site Survey should focus? Describe how Site Survey can be accomplished in large company. (7p)

b) What issues should be taken care of when planning home WLAN network? (4p)

4.

a) Let's create 4-byte sequence  $S_i$ , which consist of numbers from zero to three:

$$\begin{array}{cccc} S_i = & 0 & 1 & 2 & 3 \\ & S_0 & S_1 & S_2 & S_3 \end{array}$$

We also create 4-byte keysequence  $K_i$ , where we repeat the key as long as  $K_i$  is full (let's select 2 and 5):

$$\begin{array}{cccc} K_i = & 2 & 5 & 2 & 5 \\ & K_0 & K_1 & K_2 & K_3 \end{array}$$

Generate encryption key  $S_i$ . Encrypt text "HI" ("H" is 01001000 and "I" is 01001001 in binary form). Decrypt text in the receiving end and check that you got the same "HI" that was sent! (Hint: WEP encryption & RC4) (5p)

b) What BSS, IBSS and ESS are? How do they differ from each other? Draw a picture about each of them to support your explanation. (6p)

5.

a) How security is taken care of in WLAN networks? What vulnerabilities are there in WLAN security? How WLAN security can be improved? (7p)

b) Why WLAN uses CSMA/CA protocol? How does it differ from Ethernet's CSMA/CD protocol? (4p)