جامعة الأهرام الكندية
AHRAM CANADIAN UNIVERSITY
Faculty of Computer Science & IT

Course name: Wireless Network
Course Code: CNE405
Lecturer: Dr. Ahmed ElShafee

Exam number: Midterm, model answer
Exam Date: 16/04/2013
Time Allowed: 60 minutes

Name: ______________________
ID: ______________________

[1]	[2]			Total
	2.1	2.2.a	2.2.b	
/15	/5	/5	/5	/30

MCQ Answer Area

Attempt all the following question, mark your answer in the following tables correspondingly

Q	A	B	C	D	E	
1						B and C
2						C and D
3						A and C
4						C
5						A
6						A, B, and E
7						A
8						C
9						A
10						C
11						D
12						C
13						C
14						B
15						D

Part 1: MCQ

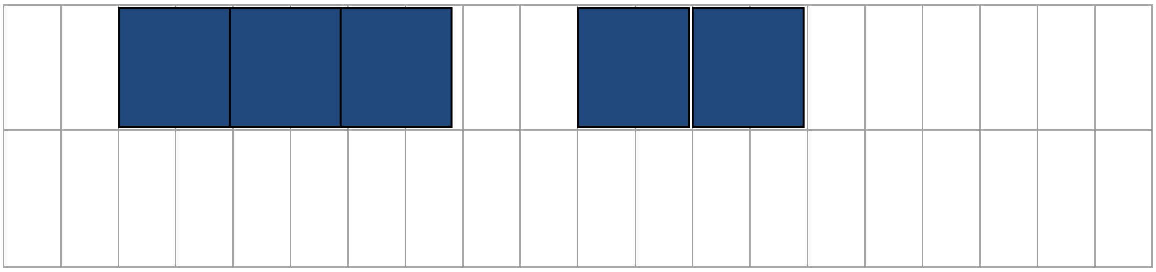
1	Which two of the following are unlicensed frequency bands used in the Egypt? (Choose two.) **a.** 2.0 MHz **b.** 2.4 GHz **c.** 5.0 GHz **d.** 6.8 GHz	B and C
2	The 5.0-GHz range is used by which two of the following 802.11 standards? (Choose two.) **a.** 802.11 **b.** 802.11b/g **c.** 802.11n **d.** 802.11a	C and D
3	DSSS uses a chipping code to encode redundant data into the modulated signal. Which two of the following are examples of chipping codes that DSSS uses? (Choose two.) **a.** Barker code **b.** Baker code **c.** Complementary code keying (CCK) **d.** Cypher block chaining (CBC)	A and C
4	With DRS, when a laptop operating at 11 Mbps moves farther away from an access point, what happens? **a.** The laptop roams to another AP. **b.** The laptop loses its connection. **c.** The rate shifts dynamically to 5.5 Mbps. **d.** The rate increases, providing more throughput.	C
5	DSSS binary phase-shift keying uses what method of encoding at the 1-Mbps data rate? **a.** 11-chip Barker code **b.** 8-chip CCK **c.** 11-chip CCK **d.** 8-chip Barker code	A
6	The IEEE committees work on which of the following wireless standards? (Choose all that apply.) **a.** 802.11a **b.** 802.11g **c.** 802.11x **d.** 802.1q **e.** 802.11b	A, B, and E
7	In Europe, can a professional installer increase the gain on wireless antennas? **a.** Yes, provided that he or she decreases the transmit power using a 1:1 ratio. **b.** No; this is illegal. **c.** Only with a amplefire. **d.** Antennas don't have anything to do with gain.	A
8	Which organization certifies interoperability for wireless equipment? **a.** Wi-Max Alliance	C

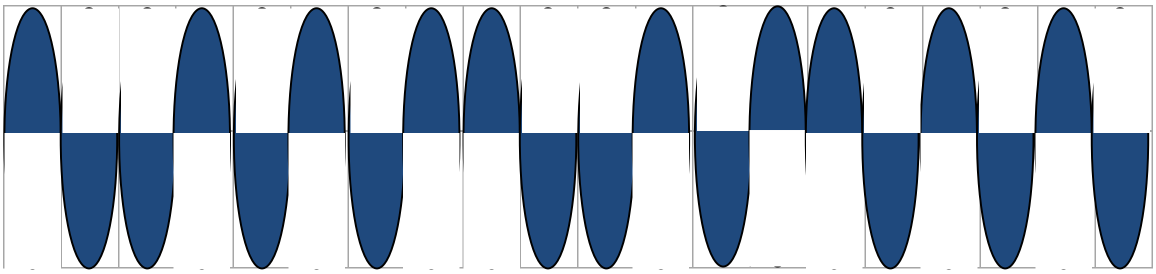
	b. IEEE **c.** Wi-Fi Alliance **d.** FRF.12	
9	EIRP is calculated using which of the following formulas? **a.** EIRP = transmitter power – cable loss + antenna gain **b.** EIRP = interference – cable loss + antenna gain **c.** EIRP = cable gain – cable loss + antenna gain **d.** EIRP = transmitter loss + cable loss + antenna gain	A
10	Metal desks, glass, light fixtures, and computer screens can contribute to which influence on wireless transmissions? **a.** Scattering **b.** Refraction **c.** Reflection **d.** Absorption	C
11	Carpet, human bodies, and walls can contribute to which influence on wireless transmission? **a.** Scattering **b.** Refraction **c.** Reflection **d.** Absorption	D
12	For line of sight (LOS) transmissions, what can determine where signals can become out of phase? **a.** Free Path Zone **b.** EIRP **c.** Fresnel Zone **d.** Phase Zone	C
13	Which of the following topologies can be used with clients closer than 20 feet (6 meters)? **a.** WLAN **b.** WWAN **c.** WPAN **d.** WMAN	C
14	What is the name of the common WMAN technology? **a.** WiMAN **b.** WiMAX **c.** Wi-Fi **d.** WiNET	B
15	What does BSS stand for? **a.** Basic Service Signal **b.** Basic Service Separation **c.** Basic Service Set **d.** Basic Signal Server	D

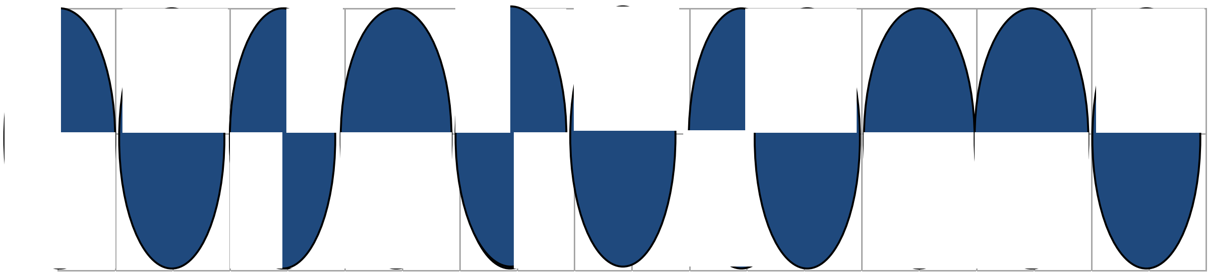
Part2:

2.1 Binary & Quadrature phase shift keying modulation techniques are used in 802.11b standard, plot a graph contains sine wave that carries the following data [0 1 1 1 0 1 1 0 0 0]

(Figure should contains original sine wave, one sine wave for BPSK, one sine wave for QPSH

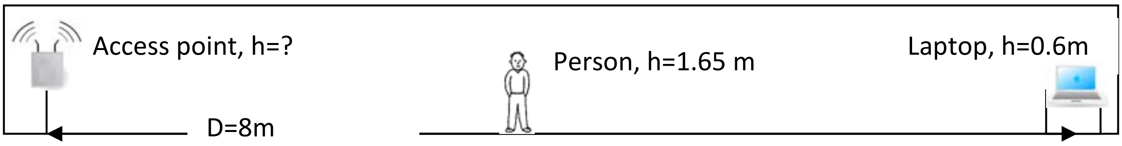






2.2 You are asked to install an access point (802.11 b/g) in a long corridor (8 m length, 3.0 m height). Considering the average length of the human being is 1.65 meters. Calculate the minimum height of the access point (from ground) to guarantee coverage for the following cases

a. Access point installed on the beginning of the corridor while the user put his laptop on a table of 0.6 meter height in the other end of the



Calculating 1st Fresnel zone shortest radius

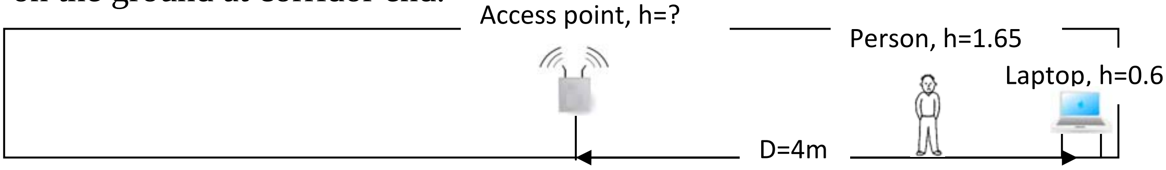
1st Fresnel zone radius (m) = 8.657 x $(D/f)^{0.5}$

r = 8.657 x $(0.008/2.4)^{0.5}$=0.5 meters

we need 60% clear path = 0.5 x .6=0.3 meters

Access point min height = 1.65+0.3= 1.95 meters

b. Access point is installed in the middle of the corridor while the user sits on the ground at corridor end.



Calculating 1st Fresnel zone shortest radius

1st Fresnel zone radius (m) = 8.657 x $(D/f)^{0.5}$

r = 8.657 x $(0.004/2.4)^{0.5}$=0.35 meters

we need 60% clear path = 0.35 x .6=0.21 meters

Access point min height = 1.65+0.21= 1.86 meters

Hint, 1st Fresnel zone radius (m) = 8.657 x $(D/f)^{0.5}$
D = total distance in kilometers
f = frequency transmitted in gigahertz.