Name:	•••••		•••••			
Roll No. :			**********			
Invigilato	r's S	lgnature :		******		
		CS/B.Tech (E	CIE-N)/S	EM-8/EC-802D/2010		
		그 경기적인 교통하다 등 모든 그림	10			
		MOBILE COM	MUNIC	CATION		
Time Allo	tted	: 3 Hours		Full Marks: 70		
	Th	e figures in the mar	ain indica	ute full marks.		
Candid	200			wers in their own words		
Curuux	uico		s practice			
			JP – A			
		( Multiple Choice	Type Q	iestions )		
1. Cho	ose 1	the correct alternativ	ves for an	ny ten of the following:		
				$10 \times 1 = 10$		
i)	The	first generation mo	bile cellu	ilar system is		
	a)	GSM	<b>b</b> )	AMPS		
	c)	IS-95	d)	Pagers.		
n)	In the physical layer Bluetooth uses					
	a)	FHSS	<b>b</b> )	DSSS		
	c)	DHSS	d)	OFDM.		
iii)	As	ingle frame in GSM	frame st	ructure consists of		
	a)	10 time slots	<b>b</b> )	8 time slots		
	c)	7 time slots	d)	4 time slots.		
iv)	IEEE 802-11 b has data transfer rate					
	a)	54 mbps	b)	11 mbps		
and the second		400 mbps	d)	none of these.		

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v)	IS-9	95 has frequency	reuse factor				
	a)	4	<b>b</b> )	9,50,000			
	c)	7	<b>d</b> )	11.			
vi)	The	multiple access	t <b>echn</b> ique u	sed in AMPS is			
	a)	FDMA	ъ)	CDMA			
	c)	TDMA	d)	FHMA.			
vii)	Near-far problem occurs in						
	a)	TDMA	<b>b</b> )	FDMA			
	c)	CDMA	d)	CSMA.			
viii)	ED	GE has the data	ransfer rate	in GSM network			
	a)	144 kbps	<b>b</b> )	384 kbps			
ja des e	c)	9.6 kbps	d)	none of these.			
ix)			<del>-</del> .	cluster then frequency			
	reu	se factor of a cell	ular system	is given by			
	a)	N	<b>b</b> }	1/N			
	c)	N <sup>2</sup>	d)	$N^{\frac{1}{2}}$ .			
x)	IR (	Infrared ) comm	unication us	ses frequency range			
3	a)	MHz	<b>b</b> )	kHz			
	c)	Several Hz	d)	GHz.			
xi)	Sta tim	tions do not ser	nse the me	dium during			
	a)	RTS	<b>b</b> )	CTS			
	c)	SIFS	<b>d</b> )	NAV.			
xii)	D-A	MPS has the free	quency for re	everse communication			
	a)	824 MHz	<b>b</b> )	869 MHz			
	c)	849 MHz	d)	894 MHz.			

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#### **GROUP - B**

## (Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$ 

- 2. Draw the basic algorithm of CSMA/CD and explain.
- 3. Define hand-off & different types of hand-off. What is frequency reuse factor?
- 4. What do you mean by spread spectrum modulation?
- 5. The US AMPS system is allocated 50 MHz of spectrum in the 80 MHz range and provides 832 channels. 42 of those channels are control channels. Assume a base station transmits control information on channel 352 operating at 880-560 MHz. What is the transmission frequency of a subscriber unit transmitting on channel 352.
- 6. What is sub-satellite point? What is the visibility condition of a satellite?

#### GROUP - C

#### (Long Answer Type Questions)

Answer any three of the following.  $3 \times 15 = 45$ 

- 7. a) Prove that for a hexagonal geometry, the co-channel reuse ratio is given by  $Q = \sqrt{(3N)}$ , where  $N = t^2 + tJ + f^2$ .
  - b) Derive that  $N=t^2+ij+j^2$ , where N is the number of cells in a cluster. 8+7
- 8. a) Draw a comparative study of GSM & CDMA and evaluate the better choice.
  - b) What are the major highlights and concept of a 3G network?
  - c) What is WAP? Explain the various useful aspects of WAP in mobile communication. 6+5+4

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[ Turn over

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- 9. a) Explain packet switching and circuit switching.
  - b) Why does 2.5 generation use both packet switching and circuit switching?
  - c) Why are different coding mechanisms used in 2G and 2.5G?
  - d) Why are more 3 APS not placed at the same location?
  - e) What is 40?

3 + 3 + 3 + 3 + 3

- 10. a) Draw a comparative study of GSM and CDMA. Evaluate the better choice.
  - b) Explain the concept of Okumura propagation model as applicable to the PCS.
  - c) With the help of block diagram, explain the concept of cordless telephone. (4+2)+5+4
- 11. Write short notes on any three of the following:

 $3 \times 5$ 

- a) IR
- b) Paging system
- c) GPRS
- d) AMPS
- e) Bluetooth.

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