GURU NANAK INSTITUTE OF TECHNOLOGY
An Autonomous Institute under MAKAUT
2021
MOBILE COMMUNICATION
EC(EI)802A

TIME ALLOTTED: 3 HOURS **FULL MARKS: 70**

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable

GROUP – A
(Multiple Choice Type Questions)

Answer any ***ten*** from the following, choosing the correct alternative of each question: **10×1=10**

			Marks	CO No
1.	(i)	Near-far problem occurs in a) TDMA b) CDMA c) FDMA d) CSMA	1	CO1
	(ii)	The first generation mobile cellular system is a) GSM b) AMPS c) IS-95 d) Pagers	1	CO1
	(iii)	A cordless telephone operates with one – a) UPS b) Fixed port c) protection circuit d) standby processor	1	CO1
	(iv)	The visitors' nodes in mobile communication are registered in – a) HLR b) EIR c) VLR d) AUC	1	CO2
	(v)	Co channel interference in GSM System can be reduced by- a) Micro cells b) Dynamic channel allocation c) sectoring d) guard band	1	CO2
	(vi)	GPRS stands for – a) Global Packet Radio System b) Global Packet Radio Service c) General Packet Radio System d) General Packet Radio Service	1	CO3

	(vii)	For the hexagonal cell geometry of seven cells cluster the co-channel reuse ratio Q= D/R is- a) 3 b) 4.58 c) 5.20 d) 6	1	CO1
	(viii)	Why neighboring stations are assigned different group of channels in cellular system? a) To minimize interference b) To minimize area c) To maximize throughput d) To maximize capacity of each cell	1	CO1
	(ix)	IEEE 802.11b has data transfer rate- a) 54 mbps b) 11mbps c) 400 mbps d) None of the above	1	CO2
	(x)	Transponder is basically- a) it receives a signal at one frequency , amplify and transmit it to on another frequency b) it receives a signal at one frequency , amplify and transmit it to on double frequency c) it receives a signal at one frequency , amplify and transmit it to on same frequency d) none of the above	1	CO4
	(xi)	IS-95 has frequency reuse factor a) 4 b) 9 c) 7 d) 1	1	CO4
	(xii)	Why Packet Switching is preferred for PCN? a) Packet switching is suitable for a wide range of service areas b) Packet Switching Architecture is easy c) Cost effective d) Above all	1	CO4

GROUP – B
(Short Answer Type Questions)

Answer any ***three*** from the following: **3×5=15**

			Marks	**CO No**
2.	(a)	What do you mean by MA techniques?	1	CO1
	(b)	What are the advantages of the CDMA over TDMA and FDMA?	2	CO1
	(c)	Explain the term EIRP and SCM.	2	CO1
3.	(a)	What is roaming?	1	CO1
	(b)	Define the purposes of HLR and VLR	4	CO2

4.	(a)	What do you mean by fading? What is Frequency Reuse?	3	CO1
	(b)	What are the uplink and downlink frequencies for satellite communication? Give typical values	2	CO2
5.		What do you mean by Co-channel cell? What is the procedure to locate the co channel cells? Explain in brief.	5	CO1
6.		If a signal-to-interference ratio of 15dB is required for satisfactory forward channel performance of a cellular system, what is frequency reuse factor and cluster size that should be used for maximum capacity if the path loss exponent is (a) n = 4, n = 3? Assume that there are six co-channel cells in the first tier, and all of them are at the same distance from the mobile. Use suitable approximation.	5	CO1

GROUP – C
(Long Answer Type Questions)

Answer any ***three*** from the following: **3×15=45**

			Marks	**CO No**
7.	(a)	Draw and Explain GSM architecture.	7	CO3
	(b)	Explain the signal processing technique in GSM	6	CO3
	(c)	Write down the name of the different channels used in GSM.	2	CO3
8.	(a)	What do you mean by CSMA-CD and CSMA-CA?	5	CO2
	(b)	What Re the benefits of Broad Forward Next Generation EIR over major differentiators compared to traditional EIR products	5	CO2
	(c)	What is the function of SDMA? Explain with a suitable diagram	5	CO2
9.	(a)	What is PCN? Which one is better for PCN- circuit switching or Packet Switching and why?	3	CO3
	(b)	Draw and explain the cellular packet switched architecture for a metropolitan area Network.	5	CO3
	(c)	Draw and Explain the function of the Trunk interface unit and wireless interface unit of cellular packet switched architecture.	7	CO4
10.	(a)	Explain with a suitable timing diagram how a call is successfully generated by a mobile station to a PSTN with a suitable timing diagram	6	CO1
	(b)	What is GPS? Explain its functions.	4	CO3
	(c)	Mention and explain the several standards for wireless LAN technology.	5	CO4

11.		Write short notes on ***any three*** of the following:	3 X5=15	
	(a)	GPRS	5	CO4
	(b)	AMPS	5	CO1
	(c)	Bluetooth	5	CO2
	(d)	Mobile computing	5	CO3
	(e)	Wireless LAN	5	CO4
	(f)	Pager	5	CO1