Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2020

Subject Code:2170710 Date:25/01/2021

Subject Name:Mobile Computing and Wireless Communication

Time:10:30 AM TO 12:30 PM Total Marks: 56

Instructions:

1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Define Channel capacity. What is Shannon's capacity formula for noisy channel?	**03**
	(b)	List and explain the types of antenna in wireless network with their applications.	**04**
	(c)	Compare LAN, MAN and WAN with proper diagram.	**07**
Q.2	**(a)**	Describe Wireless application protocol.	**03**
	(b)	Classify Guided and Unguided media. Show the use of Guided media in real world.	**04**
	(c)	Define Mobile IP. Explain Agent discovery, Registration and Data transfer in Mobile IP.	**07**
Q.3	**(a)**	List and explain functionality of Serving GPRS Support Node(SGSN) and Gateway GPRS Support Node(GGSN).	**03**
	(b)	What are the common layouts available in Android? Elaborate any two layouts.	**04**
	(c)	Define Radio propagation. List and explain propagation modes.	**07**
Q.4	**(a)**	Classify and express Services provided by IEEE 802.11.	**03**
	(b)	When Hidden station and Exposed station problem arise in wireless	**04**
	(c)	Draw and explain GSM architecture.	**07**
Q.5	**(a)**	Define and explain Android Framework.	**03**
	(b)	Show the use of below GSM Identifiers. i) IMEI ii) IMSI iii) MSISDN iv) MSRN	**04**
	(c)	Explain Amplitude shift keying(ASK), Frequency shift keying(FSK) and Phase shift keying(PSK) in digital-to-analog conversion.	**07**
Q.6	**(a)**	Justify, Why Hexagon cell shape is used in cellular network?	**03**
	(b)	Define Handover. List and explain the types of handover.	**04**
	(c)	Draw and explain Bluetooth protocol stack.	**07**
Q.7	**(a)**	State the difference between Ad hoc and Infrastructure network.	**03**
	(b)	Explain Extended service set(ESS) and Basic service set(BSS) in 802.11 architecture.	**04**
	(c)	Enlist and explain Error detection methods in cellular wireless network.	**07**
Q.8	**(a)**	List the functionality of Service Discovery Protocol(SDP).	**03**
	(b)	Explain Piconet and Scatternet.	**04**
	(c)	Sketch and express meaning of every component of Android architecture.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VIII EXAMINATION – SUMMER 2020

Subject Code: 2170710 Date:28/10/2020

Subject Name: MOBILE COMPUTING AND WIRELESS COMMUNICATION

Time: 10:30 AM TO 01:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	Explain any three addresses and identifiers used in GSM with example.	**03**
	(b)	Explain Android EditText and TextView control with an example.	**04**
	(c)	Draw and explain the GPRS transmission plane protocol model.	**07**
Q.2	**(a)**	Given a channel with an intended capacity of 50 Mbps, the bandwidth of the channel is 5 MHz. What signal-to-noise ratio is required to achieve this capacity?	**03**
	(b)	Discuss the manifest file with example.	**04**
	(c)	What is wave propagation? Discuss various modes of propagation with example.	**07**
		OR	
	(c)	Explain frequency hopping spread spectrum.	**07**
Q.3	**(a)**	What is Direct Sequence Spread Spectrum technology?	**03**
	(b)	Explain any two various signal multiplexing techniques.	**04**
	(c)	Draw and explain Bluetooth protocol stack.	**07**
		OR	
Q.3	**(a)**	Explain L2CAP protocol of Bluetooth.	**03**
	(b)	How DSSS does works in CDMA technology?	**04**
	(c)	Draw and explain the IEEE 802.11 architecture in detail.	**07**
Q.4	**(a)**	Define spreading sequence.	**03**
	(b)	List different categories of spreading sequences. Explain Walsh code with example.	**04**
	(c)	Discuss Mobile IP.	**07**
		OR	
Q.4	**(a)**	Define channel capacity. Write Shannon capacity formula.	**03**
	(b)	State the key factors that affect channel capacity.	**04**
	(c)	Explain GSM architecture.	**07**
Q.5	**(a)**	What is the need of ARQ?	**03**
	(b)	Explain Automatic Repeat Request (ARQ) in details.	**04**
	(c)	List all and explain any five IEEE 802.11 services.	**07**
		OR	
Q.5	**(a)**	Explain piconet and scatternet.	**03**
	(b)	Write a note on DECT frame format.	**04**
	(c)	Define Android layout. Explain various Android layouts.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019

Subject Code: 2170710 Date: 28/11/2019

Subject Name: Mobile Computing and Wireless Communication

Time: 10:30 AM TO 01:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain the purpose of Home Location Register (HLR). List the information which is stored in Home Location Register (HLR).	**03**
	(b)	Compare Guided and Unguided media with its applications.	**04**
	(c)	What is wave propagation? Discuss various modes of propagation with example.	**07**
Q.2	**(a)**	Explain the terms with respect to OSI Model : Frame , Packet & Segment	**03**
	(b)	Identify the use of Mobile IP. How does Mobile IP work?	**04**
	(c)	Explain Addresses and Identifiers used in GSM with Example.	**07**
		OR	
	(c)	Illustrate different scenarios of Roaming and Handoff in GSM with proper Examples.	**07**
Q.3	**(a)**	What is the Nyquist Theorem and Why Does it Matter?	**03**
	(b)	Explain Hidden Station and Exposed Station Problem in wireless network. Propose the solution for the problem.	**04**
	(c)	Describe Cell Splitting and Cell Sectoring with its limitations in detail.	**07**
		OR	
Q.3	**(a)**	Why Multiplexing is needed in wireless communication and What is the use of Guard band in telecommunication networks?	**03**
	(b)	Draw and Explain IEEE 802.11 protocol architecture.	**04**
	(c)	How Error Control is implemented using Automatic Repeat Request (ARQ) mechanism?	**07**
Q.4	**(a)**	Explain Voice and Data Routing in GPRS with proper diagram.	**03**
	(b)	Differentiate Amplitude, Frequency and Phase Shift Keying in Digital Modulation with proper diagram.	**04**
	(c)	Explain each layer of Bluetooth Protocol Stack.	**07**
		OR	
Q.4	**(a)**	Compare Paging and Location update in GSM.	**03**
	(b)	Define FHSS. Discuss advantages and applications of FHSS.	**04**
	(c)	State the applications of Bluetooth and differentiate between Piconet and Scatternet with neat diagram.	**07**
Q.5	**(a)**	Draw and explain MAC frame Format in WLAN.	**03**
	(b)	We have a channel with a 1-MHz bandwidth. The SNR value for this channel is 63. What are the appropriate Bit rate and Signal level using Shannon's and Nyquist's Formula?	**04**
	(c)	Describe Android application Architecture.	**07**
		OR	
Q.5	**(a)**	Enlist and Explain services provided by IEEE 802.11.	**03**
	(b)	A typical voice channel has SNR as 30dB and Bandwidth as 2.7KHz. Calculate the approximate maximum information capacity of the channel?	**04**
	(c)	Enlist & Explain common layouts available in android.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(NEW) EXAMINATION – SUMMER 2019

Subject Code:2170710 Date:16/05/2019

Subject Name:Mobile Computing and Wireless Communication

Time:02:30 PM TO 05:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	Define Reflection, Refraction and diffraction.	**03**
	(b)	Explain packet switching and circuit switching.	**04**
	(c)	Explain GSM call routing.	**07**
Q.2	**(a)**	Discuss hidden and exposed terminals.	**03**
	(b)	Write a short note on selective repeat ARQ.	**04**
	(c)	Explain various signal multiplexing techniques.	**07**
		OR	
	(c)	Discuss Mobile IP.	**07**
Q.3	**(a)**	Differentiate infrastructure and ad-hoc network.	**03**
	(b)	Explain handover process in cellular system.	**04**
	(c)	Explain frequency hopping spread spectrum.	**07**
		OR	
Q.3	**(a)**	What are the advantages of WLAN.	**03**
	(b)	What is Multi-path propagation and fading?	**04**
	(c)	Discuss GSM architecture in detail.	**07**
Q.4	**(a)**	Discuss Piconet and Scatternet.	**03**
	(b)	Describe any one error detection technique with suitable example.	**04**
	(c)	Explain DFWMAC-DCF using CSMA/CA.	**07**
		OR	
Q.4	**(a)**	Differentiate GSM and CDMA.	**03**
	(b)	Explain L2CAP protocol of Bluetooth.	**04**
	(c)	Draw and explain the GPRS transmission plane protocol model.	**07**
Q.5	**(a)**	Explain the power saving states of Bluetooth device.	**03**
	(b)	Discuss Activity life cycle in Android.	**04**
	(c)	Explain Android platform architecture.	**07**
		OR	
Q.5	**(a)**	Explain types of Intents.	**03**
	(b)	Discuss the manifest file with example.	**04**
	(c)	Write a note on Bluetooth protocol stack.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2018

Subject Code: 2170710 Date: 26/11/2018

Subject Name: Mobile Computing and Wireless Communication

Time: 10:30 AM TO 01:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	What is ARQ? What is importance of it?	**03**
	(b)	What is noise? Discuss briefly types of noise and its effect on transmission signal.	**04**
	(c)	Compare and contrast OSI model and TCP/IP protocol architecture.	**07**
Q.2	**(a)**	What do you mean by channel capacity? What are the factors that affect it?	**03**
	(b)	Differentiate circuit switching and packet switching	**04**
	(c)	What is Mobile IP? Explain discovery, registration and tunneling in Mobile IP.	**07**
		OR	
	(c)	What is Direct Sequence Spread Spectrum technology? How does it work in CDMA technology?	**07**
Q.3	**(a)**	Compare GSM and CDMA technology.	**03**
	(b)	Explain various transmission media w.r.t. merit, demerits and application of each.	**04**
	(c)	Explain functional architecture of GSM system and types of services provided by GSM.	**07**
		OR	
Q.3	**(a)**	Define IMSI, IMEI and MS-ISDN and write significance of each.	**03**
	(b)	What is Handover? Explain types of it in brief.	**04**
	(c)	Explain IEEE 802.11 architecture and services.	**07**
Q.4	**(a)**	Define following. 1) Fading 2) Modulation	**03**
	(b)	What are HLR and VLR? Describe its functions in call routing and roaming.	**04**
	(c)	Draw and explain Bluetooth Protocol Architecture.	**07**
		OR	
Q.4	**(a)**	Define ASK, FSK & PSK.	**03**
	(b)	Describe Error Control Coding in brief.	**04**
	(c)	Discuss the network elements in GPRS that are different from GSM. Also discuss applications and limitations of GPRS.	**07**
Q.5	**(a)**	Explain Android TextView control with an example.	**03**
	(b)	How billing and charging functions are handled in GPRS?	**04**
	(c)	Explain different layouts in Android.	**07**
		OR	
Q.5	**(a)**	Explain Android ButtonView control with an example.	**03**
	(b)	Discuss briefly: Limitations of GPRS.	**04**
	(c)	Explain Android architecture with diagram.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2017

Subject Code: 2170710 Date:10/11/2017

Subject Name: Mobile Computing and Wireless Communication

Time: 10:30 AM TO 01:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Define Channel Capacity. Define its key factors that affect it.	**03**
	(b)	Compare: OSI Model and TCP/IP Protocol Architecture.	**04**
	(c)	Draw and Explain GSM Architecture with roles of its components.	**07**
Q.2	**(a)**	What is Frequency Reuse? Explain with proper diagram.	**03**
	(b)	Differentiate: Circuit Switching and Packet Switching.	**04**
	(c)	What is Mobile IP? Explain Discovery, Registration and Tunneling with Mobile IP.	**07**
		OR	
	(c)	What is the need for ARQ? Explain Sliding Window Protocol with example.	**07**
Q.3	**(a)**	Explain DECT Protocol Architecture.	**03**
	(b)	A cellular system uses FDMA with spectrum allocation of 12.5 MHz in each direction, a guard band at the edge of the allocated spectrum of 10 KHz, and a channel bandwidth of 30 KHz. Find out number of channels available.	**04**
	(c)	Draw and Explain Bluetooth Protocol Architecture.	**07**
		OR	
Q.3	**(a)**	Compare: GSM and CDMA.	**03**
	(b)	Consider Global System for Mobile, which is TDMA/FDD system that uses 25 MHz for the forward link, which is broken in to radio channels of 200 KHz. If 8 speech channels are supported on a single radio channel and if no guard band is assumed, find the no of simultaneous users that can be accommodated in GSM.	**04**
	(c)	Draw Android Architecture. Also explain Android Application Framework in brief.	**07**
Q.4	**(a)**	What is Antenna Gain? Explain with its formula.	**03**
	(b)	What is GPRS? How billing and charging is done in GPRS?	**04**
	(c)	What is handoff? Explain its various types.	**07**
		OR	
Q.4	**(a)**	Define IMSI, IMEI and MS-ISDN and write their use.	**03**
	(b)	Explain IEEE 802.11 Architecture.	**04**
	(c)	Explain Wireless Application Protocol (WAP) in detail.	**07**
Q.5	**(a)**	What is hidden terminal problem? How it can be avoided?	**03**
	(b)	For Message M = 1010001101 and Pattern P = 110101, find CRC.	**04**

	(c)	Explain Delta Modulation with their transmission and reception block diagram.	**07**

OR

Q.5	**(a)**	Define: Peak Amplitude (A), Frequency (f) and Period (T).	**03**
	(b)	Explain different types of power control techniques in cellular networks.	**04**
	(c)	Explain Direct Sequence Spread Spectrum in detail.	**07**

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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(NEW) • EXAMINATION – WINTER 2016

Subject Code:2170710 Date:23/11/2016

Subject Name:Mobile Computing and Wireless Communication

Time:10.30 AM to 1.00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain Handoff in detail.	**07**
	(b)	Explain GSM architecture and role of it components.	**07**
Q.2	**(a)**	Define channel capacity. Write Shannon and Nyquist capacity formula. State the key factors that affect channel capacity.	**07**
	(b)	i. Explain Android EditText and TextView control with an example.	**04**
		ii. Given a channel with an intended capacity of 50 Mbps, the bandwidth of the Channel is 5 MHz. What signal-to-noise ratio is required to achieve this capacity?	**03**
		OR	
	(b)	i. Write a note on DECT frame format.	**04**
		ii. Write a note on piconet and scatternet.	**03**
Q.3	**(a)**	Write advantages and disadvantages of packet switching over circuit switching.	**07**
	(b)	Draw and explain Bluetooth protocol stack.	**07**
		OR	
Q.3	**(a)**	In a CDMA network, assume there are two stations A (chip sequence: 00011011) and E (chip sequence: 00101110). Figure-1 shows two cases of both stations transmitting at the same time. Show the transmitted sequences S1 and S2 and how DSSS does the recovery at receiver. **A E** 1 0 A sent 1 and B sent 0 0 - only A sent 0 (**Figure-1)**	**07**
	(b)	Discuss with suitable diagram distributed coordination function with IEEE 802.11 medium access control logic.	**07**
Q.4	**(a)**	Explain operation of Mobile IP.	**07**
	(b)	Discuss the network elements in GPRS that are different from GSM. Also discuss applications and limitations of GPRS.	**07**
		OR	
Q.4	**(a)**	Define spreading sequence. List different categories of spreading sequences. Explain Walsh code with example.	**07**
	(b)	What is the bandwidth efficiency for FSK, ASK, PSK and QPSK for a bit error rate of 10^{-7} on a channel with an SNR of 12 dB?	**07**
Q.5	**(a)**	What is fading? Differentiate i. Fast and slow fading ii. Flat and selective fading.	**07**
	(b)	List all and explain any five IEEE 802.11 services.	**07**
		OR	

Q.5 **(a)** Why is UDP needed? Why can't user program directly access IP? **07**

(b) Define Android layout. Explain various Android layouts. **07**

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