**ECE 23**

**Quiz 10**

1. What is the process of changing (or transferring) the frequency range of a particular signal without changing the information content?

Answer: **Frequency Translation**

1. Which of the following is a Hadamard Matrix of the 2nd order (n=2)?

Answer:

1. The modern Spread Spectrum Technology that we used today in modern communication systems, is actually based on what form of multiplexing.

Answer: **CDM**

1. HSPA (or High-speed packet access) is a network data technology used in what cellular technology generation?

Answer: **3G**

1. In 1994, ISLA Communications (ISLACOM) offered and pioneered the first GSM mobile service in the Philippines. What is the new name of this company?

Answer: **INNOVE Communications, Inc.**

1. What are the two 3G UMTS frequency bands utilized by SMART Communications in the Philippine?

Answer:**B1(2100 MHz) & B8(900 MHz)**

1. AMPS and TACS are known as what cellular generation technology?

Answer: **1st Generation (1G)**

1. What does the acronym **DAMPS** stand for?

Answer: **Digital AMPS**

1. What does the acronym **PDH** stand for?

Ans: **Plesiochronous Digital Hierarchy**

1. What does the acronym **CHIRP** stand for?

**Compressed High Intensity Radar Pulse**

1. What does the acronym **SONET** stand for?

Answer: **Synchronous Optical Network**

1. What does the acronym **ETACS** stand for?

Answer: **Extended Total Access Communication System**

1. What does the acronym **ISDN** stand for?

Ans: **Integrated Services Digital Network**

1. What does the acronym **GPRS** stand for?

Answer: **General Packet Radio Services**

1. What does the acronym **ASCII** stand for?

Answer: **American Standard Code for Information Interchange**

1. What does the acronym **RSRQ** stands for?

Answer: **reference signal received quality**

1. What does the acronym **SS7** stands for?

Answer: **Signal System #7**

1. What does the acronym **RSRP** stands for?

Answer: **reference signal received power**

1. What does the acronym **CWDM** stands for?

**Coarse Wavelength Division Multiplexing**

1. What does the acronym **ASU** stand for?

Answer: **Arbitrary Strength Unit**

1. What does the acronym **DSSS** stands for?

Answer: **Direct Sequence Spread Spectrum**

1. What multiplexing technique does analog cable television used?

Answer: **FDM**

1. The spread code used in CDM are based on what type of coding scheme?

Answer: **Chip Codes**

1. What is another term for code division multiplexing technique?

Answer: **Spread Spectrum**

1. What 5G generation bad does SMART, GLOBE, and DITO operate in the Philippines?

Answer: **3500 MHz**

1. A digital Signal 1 (DS-1) has how many voices channel capacity?

Answer: **24**

1. For modern LTE cellular communication systems, which ASU value corresponds to an RSRP which is less than -140 dBm?

Answer: **ASU = 0**

1. In your mobile device, if your cellular signal quality/strength is at a value of RSRP = -95 dB, your RF location is considered what?

Answer: **Mid-Cell Signal**

1. What is the standard line Rate of E1 Carrier?

Answer: **2.048 Mbps**

1. PILTEL offered the first AMPS cellular service in the Philippines in the year 1991 and is now known as what mobile operator?

Answer: **TnT**

1. This term refers to an international telecommunication protocol standard that defines how the network elements in a PSTN exchange information and control signals.

Answer: **SS7**

1. Dense Wavelength Division Multiplexing (DWDM) which is mentioned in which ITU-T recommendation?

Answer: **ITU-T G.694.1**

1. What is the term use to denote the amount of frequency difference or separation between the Uplink and Downlink frequencies in a mobile wireless communication system?

Answer: **Frequency Division Duplexing**

1. Each voice communication channel in the AMPS cellular technology has a total bandwidth of \_\_\_\_\_\_\_\_\_\_?

Answer: **30 kHz**

1. Which of the following first generation (1G) analog cellular communication system was offered in the Philippines by PILTEL that uses the 850 MHz frequency band?

Answer: **AMPS**

1. What multiplexing technique is utilized by analog cable television to carry the different channels in a single coaxial cable gong to every household?

Answer: **FDM**

1. What is the maximum number of different voice channels that the DS-2 Carrier can carry?

Answer: **96**

1. Which of the following are characterized as an analog multiplexing technique?

Answer: **FDM and WDM**

1. Based on the ITU-T FDM Hierarchy, what do you call the FDM carrier that has a maximum capacity of 300 voice channels?

Answer: **Mastergroup**

1. Wireless Bluetooth communications uses what type of Spread Spectrum technique?

**Frequency Hopping Spread Spectrum**

**Module 11**

1. In this access method, the available bandwidth is divided into frequency bands. Each station is allocated a band to send its data. Each station also uses a bandpass filter to confine the transmitter frequencies. What is this access method called?

Answer: **FDMA**

1. What does the acronym **UFMC** stand for?

Answer: **Universal Filtered Multi-Carrier**

1. What does the acronym **SCMA** stand for?

Answer: **Sparse Code Multiple Access**

1. What does the acronym **FDD** stands for?

Answer: **Frequency-Division Duplexing**

1. What does the acronym **CSMA/CA** stand for?

Answer: **Carrier Sense Multiple Access with Collision Avoidance**

1. What does the acronym **HDLC** stand for?

Answer: **High Level Data Link Control**

1. What does the acronym **WIMAX** stand for?

Answer: **Worldwide Interoperability for Microwave Access**

1. What does the acronym **OFHMA** stand for?

Answer: **Orthogonal Frequency-Hopping Multiple Access**

1. What does the acronym **3GPP** stand for?

Answer: **3rd Generation Partnership Project**

1. SLDC is a data link layer sub protocol. Wat dos the acronym S**LDC** stand for?

Answer: **Synchronous Level Data Control**

1. What does the acronym **EVDO** stand for?

Answer: **Evolution-Data Optimized**

1. What does the acronym **TDD** stand for?

Answer: **Time-Division Duplexing**

1. CDMA is based on principles of Coding Theory specifically, Walsh Codes, where each station is assigned a unique “code”. The “code sequence” technically called a \_

Answer: **Chip**

1. This classification of multiple access method refers to the techniques used in which the bandwidth of a communications link shared time, frequency, or through codes between different stations.

Answer: **Channelization**

1. In which controlled access protocol are the data exchanges are made through the control of the primary device even when the ultimate is a secondary device. The primary device controls the link; the secondary devices follow its instructions.

Answer: **Polling**

1. In what access method does the stations share the same bandwidth of the channel with respect to time, and each station is allocated a time slot during which it can send data?

Answer: **TDMA**

1. For optimal performance, what Pseudorandom Number (PN) code sequence does CDMA use?

Answer: **Orthogonal PN sequence**

1. Which of the following is NOT a packet-based controlled access protocol?

Answer: **Duplexing (Reservation, Token Passing, Polling)**

1. This access technology used in a packet-based networks help avoid collisions before happening and is able to respond correctly if a collision does happen.

Answer**: CSMA-CA**

1. In utilizing the various multiple access technique, the number of users for the channel is **NOT** fixed.

Answer: **TRUE**

1. There is ALWAYS a possibility of data interference and collision in ALL of the different multiplexing methods.

Answer: **TRUE**

1. If a mobile phone transmits data at carrier frequency of 935 MHz to a Base Station and receives at 985 MHz, what is the duplex distance?

Answer: **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. UMS-TDD has a primary application in which generation of cellular-mobile technology?

Answer: **3G**

1. This access method primarily functions by using several sectorized antennas to allocate separated space to different uses in a wireless communications network.

Answer: **SDMA**

1. FDMA can be accurately described by which statement below?

Answer: **Different users are assigned to unique frequency slots**

1. TDMA and CDMA were initially used in which generation of cellular technology?

Answer: **2G**

1. These describes the schemes that are used to allow many mobile users to share simultaneously a finite amount of radio spectrum.

Answer: **Multiple Access Methods**

1. A method where two connected parties or devices can communicate with one another in both directions.

Answer**: Duplexing**

1. Which of the is NOT a channel-based protocol?

Answer: **CSMA**

1. TDD is used in which modern communication technology?

Answer: **Bluetooth**

1. Which access protocol requires that each station first listen to the medium before sending. In other words, it is based on the principle “sense before transmit” or “listen before talk”.

Answer: **CSMA**

1. Which data link layer sublayer provides addressing and channel access control mechanisms that make it possible for several stations (PCs) to communicate within a multiple access network that incorporates a shared medium?

Answer: **Media Access Control Sublayer**

1. The MAC address or hardware address consist of how many bits?

Answer: **48-bits**

1. The 2G mobile standard (GSM) uses what multiple access technique?

Answer: **TDMA**

1. Which of the following Multiple Access Technique is mainly utilized in 5G mobile cellular communications?

Answer: **FO FDMA**

1. Which of the following is NOT true?

Answer: **In random access methods, each stations has the right to the medium without being controlled by any other station.**

1. Which of the following statement is NOT a characteristics of multiple access technologies?

Answer: **Fixed number of sources/users of the channel**

1. In Frequency Division Duplexing, a “guard band” separates the uplink and downlink frequencies to avoid interference. However, for time duplexing, hat is sed as the equivalent term that has the similar function of the “guard band”?

Answer: **Guard Point**

1. In what layer in the OSI Model does Multiple Access Techniques are being categorized?

Answer: **Data Link**

**Module 12**

1. Which cellular communication technology first introduced SMS?

Answer: **2G (Second Generation)**

1. In cellular system, neighboring cells cannot use the same set of frequencies for communication because it may create interference for the users located near the cell boundaries

Answer: **True**

1. In GSM, the voice channels are modulated using FM, and the control channels….
2. One of the examples of a LEO satellite system is the Global Positioning System (GPS), which is contracted and operated by the US Department of Defense.

Answer: **False (MEO)**

1. One of the dominant 2G standards in North America is Interim Standard (IS – 95). It is based on TDMA and FHSS.

Answer: **False (CDMA and DSSS)**

1. GEO satellites orbit the Earth at an altitude of 22,000 km from Earth’s
2. Satellite networks are like cellular networks in that they divide the planet into cells?

Answer: **TRUE**

1. Which satellite frequency band uses the frequencies 4GHz to 8 GHz?

Answer: **C-band**

1. EDGE is considered as \_\_\_\_ ,while GPRS is \_\_\_\_\_\_\_, when it comes to …

Answer: **2.75G, 2.5G**

1. In a **soft hand-off**, when the mobile station moves from one cell to another, communication must first be broken with the previous base station before communication can be established with the new one

Answer: **False (Hard Handoff)**

1. The process of determining a position by knowing your location…

Answer: **Trilateration**

1. WiFi-6 is also known as what IEEE standards?

Answer: **IEEE-802.11ax**

1. What does the acronym **PCS** stand for?

Answer: **Personal Communications Services**

1. What does the acronym **AMTS** stand for?

Answer: **Advanced Mobile Telephone System**

1. What does the acronym **GSM** stand for?

**Global Systems for Mobile Communication**

1. How many different orbit does the GPS satellite system use?

Answer: **6 (six)**

1. What is the period of GEO satellite?

Answer: **24 Hours**

1. DAMPS uses the same bands and channels as AMPS.

Answer: **TRUE**

1. Which frequency bands is utilized by AMPS?

Answer: **800 MHz**

1. What are the frequency bands used by a WiFi-6E router?

Answer: **2.4 GHz, 5 GHz, and 6 GHz**

1. During a connected session, when the mobile station moves from one call to another, the base station
2. What type of orbit occurs at the equatorial plane and is approximately 22,000 mi from the surface of the Earth.

Answer: **GEO**

1. Shown below is the frequency reuse pattern for a cellular network. What is the reuse factor?

Answer:

1. IS-95 uses “chip” codes that are derived from what Walsh matrix size?

Answer: **64x64**

1. The satellite system uses a 77-satellite network, and was started by Motorola in 1990.

Answer: **Iridium System**

1. What does the acronym **MSC** stand for?

Answer: **Mobile Switching Center**

1. What does the acronym **ESN** stand for?

Answer: **Electronic Serial Number**

1. What does the acronym **LEO** stand for?

Answer: **Low-Earth-orbit**

1. What does the acronym **DSSS** stand for?

Answer: **Direct Sequence Spread Spectrum**

1. What does the acronym **GPS** stand for?

Answer: **Global Positioning System**

1. What does the acronym **MEO** stand for?

Answer: **Medium-Earth-orbit**

1. The GSM cellular technology originated in which European country?

Answer: **Finland**

1. AMPS is an analog cellular phone system using FDMA

Answer: **True**

1. AMPS is one of the leading cellular systems that originated in which region?

Answer: **North America**

1. What does the acronym **SMS** stand for?

Answer: **Short Message Services**

1. The period of a satellite, the time required for a satellite to make a complete trip around the Earth, is determined by which law, which defines the period as a function of the distance of the satellite from the center of the Earth.

Answer: **Kepler’s Law**

1. During a connected session, when the mobile station moves from one cell to another, the base station transfers the ongoing call to another base station. This process is called what?

Answer: **handoff**

1. GSM cellular frequency assignments can use a frequency reuse factor of not less than \_\_

Answer: **3**

1. An artificial satellite needs to have a path in which it travels around the Earth. These orbits can be equatorial, inclined, or polar.

Answer: **True**

1. Which of the following cellular technologies use CDMA?

Answer: **IS-95**