**MIDTERM Test 3**

**Regulation and Policy in the Telecommunications Industry (TM 612)**

**Test Code-120MIN-LEC-07080914-S2022**

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**INSTRUCTIONS (Read Carefully!):**

1. You will be given 120 minutes to complete the test.
2. The test is made up of three sections, A, B, and C.

**Section A** consists of 12 multiple-choice questions. You will be graded for 10 correct answers. Each correct answer carries 4 points. (Max Score 40)

**Section B** comprises of 4 questions that require short answers. You will be graded for 3 correct answers. Each correct answer carries 8 points. (Max Score 24)

**Section C** consists of 4 Problems/Descriptive Questions. You will be graded for 3 correct answers. Each correct answer carries 12 points. (Max Score 36).

**(TOTAL SCORE= 100 Points)**

**Quiz-1**: In 1997, FCC designated three radio bands for WLAN devices. These bands are called UNNI bands. What does UNNI stand for?: Pick the most accurate statement.

1. Universal Networking Information Infrastructure
2. Unlicensed National Information Infrastructure
3. University News Network Infrastructure
4. Unallocated National Number Interface

**Quiz-2:**Title 47 CFR Part 15 sets out the regulations under which an intentional, unintentional, or incidental radiator may be operated without an individual license. What do Title 47 CFR Part 15 Subpart C, D, and E Consist of:

1. Laws pertaining to monopoly and antitrust
2. Laws authorizing and empowering states and county commissioners for operating radio for first respondents
3. Laws pertaining to unlicensed low power transmitters
4. Laws pertaining to licensing requirements for telecommunication personnel

**Quiz-3**. ANSI C63.4–2003 Standards relate to the instrumentation and measurement methods of radio-frequency (RF) signals and noise emitted from electrical and electronic devices. Pick the most accurate statement about the ANSI C63.4–2003 Standards.

* 1. They relate to the hopping frequency for low range RFID  transmitters, such as car key fobs
  2. They relate to Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
  3. They relate to the measurement of Effective Isotropic Transmit Power (EITP) for antenna gain limited to 6dBi
  4. They do not relate to any of the above-noted statements

**Quiz-4.**Electromagnetic Waves travel and spread out as they go, e.g., the visible light from a lamp in your house. Pick the most accurate statement about the Electromagnetic Spectrum (EM). EM consists of:

1. X-Rays and Gama Rays
2. Microwaves and Radio Waves, the sweet spot for data communications
3. Infrared Waves and Ultraviolet Waves
4. All the statements are correct

**Quiz-5.**A wireless LAN (WLAN) is a wireless computer network that links two or more devices using wireless communication to form a local area network (LAN) within a limited area such as a home, school, computer laboratory, campus, or office building. Pick the most accurate statement about WLAN.

1. WLAN systems operate in ELF (Extremely Low Frequency, e.g., 300 Hz), considering human safety
2. One of the limitations of WLANS systems is that they can operate in the licensed band only
3. One of the limitations of WLANS systems is that they require ionosphere antennas to avoid weather dependent fading
4. WLANs use frequencies in the UHF (Ultra High Frequency) to SHF (Super High Frequency) Spectrum (between 2GHz to 30GHz)

**Quiz-6.**Pick the most accurate statement. National Telecommunications and Information Administration (NTIA), located within the Department of Commerce, is the Executive Branch agency principally responsible by law for advising the President on telecommunications and information policy issues. NTIA oversees spectrum allocation for:

1. Commercial usage only, such as public radio, mobile communication, etc.
2. For defining modulation techniques and the Modulation Index used in WLAN systems
3. For government usage, such as defense, aviation, etc.
4. Both A and B are correct

**Quiz-7**: Modulation is formally defined as the process by which some characteristic of a carrier frequency is varied in accordance with a modulating wave. In Frequency Modulation, the Modulation Index is the:

1. The ratio of Phase Modulation and Frequency Modulation
2. The ratio of the frequency deviation to the modulating frequency
3. The percentage of Analog Modulation and Digital Modulation
4. None of above

**Quiz-8**: The Wireline Competition Bureau of FCC works to ensure that all Americans have access to robust, affordable broadband and voice services. Pick the most accurate statement about FCC wireline regulations.:

1. NTIA issues licenses for wireline communication services
2. FCC regulates the rates or tariffs for wireless and wireline services at the national level but not at the FCC does have radiation safety requirements for wireless but not for wireline service operations because wireless antennas radiate energy
3. regional level.
4. None of the statements are correct

**Quiz-9**: Pick the most accurate statement. DSL is a technology that:

1. Transmits the digitized voice only over a telephone line and is not capable of sending data because lines do not have filters to separate voice from data
2. Is not similar to ISDN, as DSL uses Domain-Specific Language and ISDN uses International Subscriber Directory Number.
3. Transmits voice and digital data over the plain old telephone lines. However, it uses higher frequency bands for data and lower frequency bands for voice
4. None of the statements is correct

**Quiz-10**: Pick the most accurate statement. The TCP Session Hijacking attack may occur because:

1. The size of sequence (Seq) number and acknowledgment (ack) number is small.
2. The session negotiation takes place between server and client
3. The network does not have a firewall in place
4. None of the above statements is correct

**Quiz-11:**Pick the most accurate statement. Cost of Damage from a Cyberattack?

* 1. Is negligible, and most of the time, it is not even noticeable.
  2. May include loss of IP Packets, loss of laptops, or loss of grades in school
  3. May include loss of reputation, customer trust, and human lives, and maybe even worse
  4. Is reasonable, and big companies normally do not care about this loss

**Quiz-12:**Pick the most accurate statement. One of the major tasks of a DNS server is that:

1. It helps users to perform Direct Numerical Simulation
2. It encrypts the **D**ata **N**etwork **S**ample IP packets that leave the network server
3. It maps host names to IP addresses and vice versa
4. It provides Digital Network Services for ISDN users.

END of SECTION A

SECTION B

**Question 1.** *(Score 4+4)*

1. What is the Mission and Vision of government regarding Spectrum Management (Write four points.)
2. Give the example of any four agencies/industries NTIA is responsible for Spectrum Management.

**Question 2**. *(Score 2+6)*

There are two different types of regulatory implementations, i.e., Administrative Rule Making; and Adjudication in terms of the three lawsuits you have studied. Explain these in your words.

**Question 3**. *(Score 2+2+4)*

Explain the followings:

1. According to RF Safety Issues OET 65 (FCC), what do MPE and SAR stand for, and what do they regulate?
2. Your communication system operates in a 20mm wavelength. You have to fill out the FCC application that requires the frequency spectrum instead of wavelength. What would be a 20mm wavelength in frequency (Hz)?

**Question 4**. *(Score 2+2+2+2)*

In context with the cyberattacks, what are “Active Attacks” and “Passive Attacks”? Give two examples of each attack type.

END of SECTION B

SECTION C

**Problem** **1**. *(Score 2+2+4X2))*

The Constitution of 1789 gives congress the regulatory powers. What are the two goals of regulation from the constitutional point of view?

Regulations are of four types, i.e., Economic, Social, State and Local, and Statutory. What are the goals of Economic; and Social Regulations (list at least four goals of each)? Also, what do statutory regulations pertain to? Give an example.

**Problem** **2**. *(Score: definition 1 +golas 5, needs 3, and  problems 3)*

Define Electromagnetic Spectrum. What are the goals of Spectrum Policy Reform (write any five goals)? Why is the need for the Spectrum Reform Policy felt (write any three reasons), and what would be the problems if the spectrum policy is not reformed (list any three problems)?

**Problem** **3**. (*Score 2+2+2 3x2*)

1. POTS, ISDN, and DSL are wireleine Ciommunication technologies. Write two technology features of each technology to differentiate POTS, ISDN, and DSL.
2. Write any three key points about Wireline Regulations?

**Problem** **4.** *(Score 2+ 2+2+ 6)*

What is TCP Session Hijacking? Why and under what situation this kind of cyber attack is possible? Draw a figure to explain the protocols (or message flow) between a client and a server.

END of SECTION C