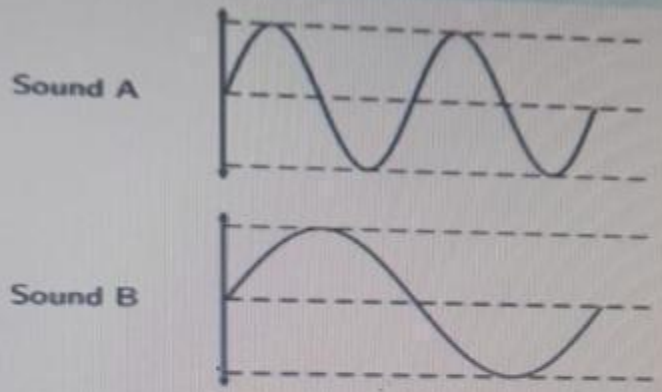
Question 2

Not yet answered

Marked out of 2

Flag question

1. Which sound has a high frequency in the Figure?



Sound A

2. How many sine waves are in a perfect square wave?

الموجة المربعة المثالية تحتوي على عدد لا نهائي من الموجات السينية.

2. How many sine waves are in each of the sounds in the above figures?

يجب علينا تحديد عدد الموجات السينية في كل منهما.

Question 9

Complete

Mark 2 out of 3

Flag question

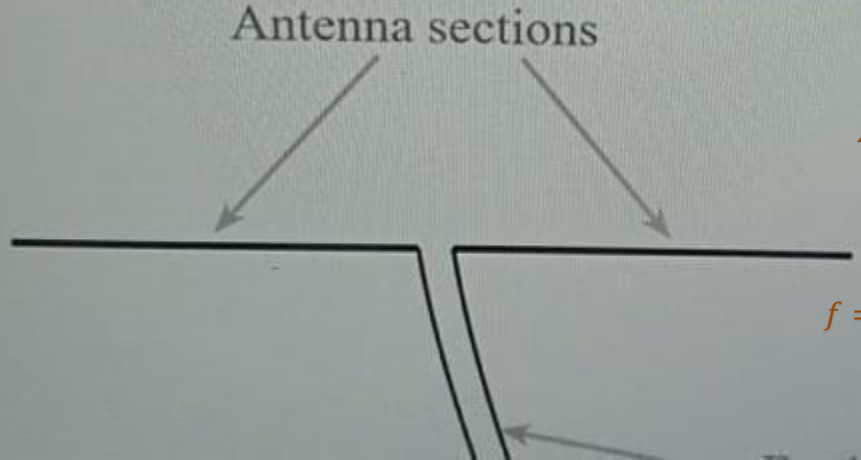
1. What is the name of the antenna that is hypothetical, radiates energy in all directions uniformly, and descriped as omnidirectional antenna?

Spherical Radiator Antenna

2. What mode of propagation is suitable for microwave transmission?

Line-of-Sight Propagation

3. For the below dipole antenna, what frequency it can transmit or receive at (knowing that the length of the antenna sections from end to end is 1.5 meters and **Light speed = Wavelength * frequency of oscillation**)



$$f = \frac{c}{\lambda}$$

$$\lambda = \frac{1.5}{2} = 0.75$$

$c = 3 \times 10^8$

$$f = \frac{3 \times 10^8}{0.75}$$

$$f = 400 \times 10^6\ Hz$$

الحل بالامتحان رح يكون بالرموز التالية:

f = c / lambda

lambda = 1.5 / 2 = 0.75

c = 3 * 10 ^ 8

f = (3 * 10 ^ 8) / 0.75

f = 400 * 10 ^ 6 Hz

Question 7

Complete

Mark 2 out of 3

Flag question

Based on Shannon Capacity formula, answer the following:

$$C = B\log_2\left(1 + \frac{S}{N}\right)$$

Figure 1: The Famous Shannon Limit/Capacity Equation

Q1:

1- Bandwidth Constraints
2- Channel Characteristics
3- Modulation Scheme
4- Coding Efficiency
5- Regulatory Limits

1. What are the factor that limit us from increasing the data rate as mush as we want?

2. What is the bandwidth of a channel of Spectrum between 5 MHz and 7 MHz?

Q2:Bandwidth = Upper Frequency − Lower Frequency = 7MHz − 5MHz = 2MHz

3. Based on this equation

$$(SNR)_{\text{dB}} = 10\log_{10}\frac{\text{signal power}}{\text{noise power}}$$

The power of a signal is 10 mW and the power of the noise is 1 μW; what are the values of SNR and SNR_{dB}?

Q3:

$$Signal\ power = 10mW$$
$$Noise\ power = 1\mu W$$
10 mW = 10 × 1000μW = 10,000μW
$$SNR = \frac{\text{Signal power}}{\text{Noise power}}$$
$$SNR = \frac{10{,}000\mu W}{1\mu W} = 10000$$
$$SNR_{dB} = 10log_{10}(\frac{\text{Signal power}}{\text{Noise power}})$$
$$SNR_{dB} = 10log_{10}(10{,}000)$$
$$SNR_{dB} = 10 \times 4 = 40dB$$

Complete

Mark 2 out of 3

Flag question

Based on the Figure below, answer the following questions:

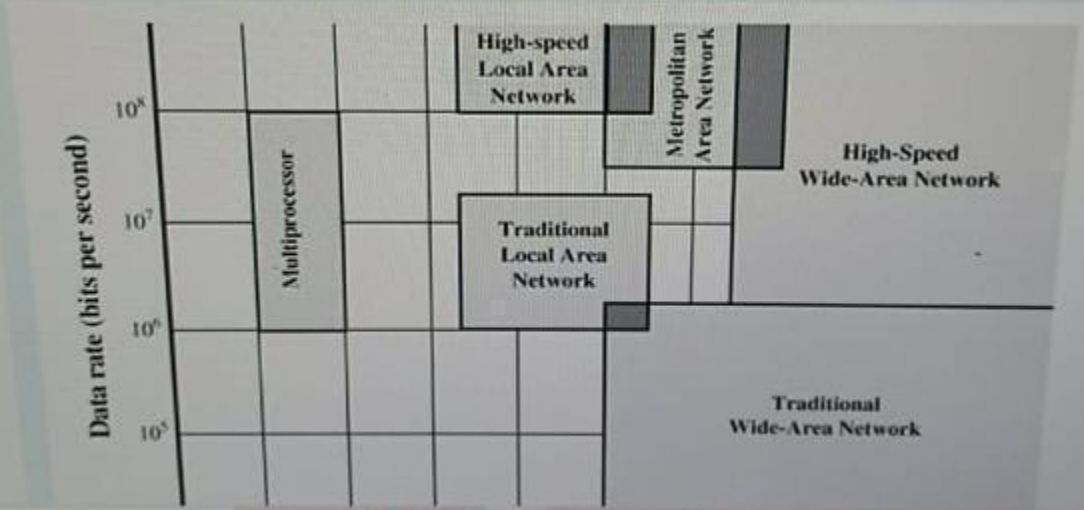
1. Where does 4G/5G fit in the figure?

Q1: في الشكل، يتم تصنيف 4G/5G في الجزء الذي يمثل "شبكة المنطقة المحلية عالية السرعة.(High-speed Local Area Network) "

2. Which in general have higher data rates, LANs or WANs?

2Q : الشبكات المحلية (LANs) لديها معدلات بيانات أعلى من الشبكات الواسعة النطاق (WANs). يمكن أن تكون LANs أكثر سرعة لأنها

3. Which networking/ communication technology reaches higher data rates and long distances together?



Q3: يمكن أن تصل تكنولوجيا الشبكات/الاتصال العالية السرعة إلى معدلات بيانات أعلى ومسافات طويلة معًا. هذا يشمل على سبيل المثال الشبكات البصرية (Optical Networks) والشبكات اللاسلكية (Wireless Networks)

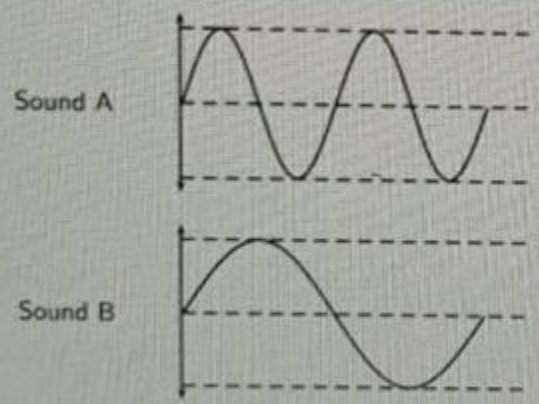
1. What do we call the signal that keeps repeating itself after some time period?

(Periodic Signal) "إشارة متكررة"

2. Give the most common example of information that when converted to electrical signals, is present as analog signals?

Voice الصوت

3. Which sound has high frequency in the Figure?



Sound A

Based on this signals

$$s(t) = A\sin(2\pi ft + \phi)$$

1. What is the variable that is used for amplitude modulation?

A(القيمة القصوى)

2. What is the variable that is used for frequency modulation?

f (التردد)

3. What is the variable that is used for phase modulation? φ (الزاوية الأولية)

1. If the wrong error rate is 2 per second, the data rate is 2 kbps, what is the the Bit-Error_Rate (BER)?

BER= Number of errors / Total number of bits transmitted
Wrong error rate = 2 errors per second
Data rate = 2 kbps (2 kilobits per second)
BER= 2 / 2000 = 0.001

2. What is the main cause that increase BER in transmission in wireless environment?

التشويش والتداخل الذي يحدث في القناة اللاسلكية. تشويش القناة وتداخل الإشارة يمكن أن يؤديان إلى تشويه الإشارة وزيادة معدل الخطأ.

3. Does BER increase or decrease with increasing "Signal-to-Noise Ratio (SNR)"?

يقل مع زيادة نسبة الإشارة إلى الضوضاء (SNR).

1. Give two examples of Ad Hoc Wireless Networks

1. WLANs
2. (Wireless Sensor Networks)شبكات الاستشعار اللاسلكية

2. Which technology is not appropriate for Ad Hoc Network?

a. Bluetooth

b. WLAN

c. Fiber Optics

c. Fiber Optics

Midterm Wireless network exam Winter 2022

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Question 6

Not yet answered

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1. If the wrong error rate is 4 per second, the data rate is 4 kbps, what is the Bit-Error_Rate (BER)?

2. Does BER increase or decrease with increasing "Signal-to-Noise Ratio (SNR)"?

يقل مع زيادة نسبة الإشارة إلى الضوضاء (SNR).

Q1:
BER= Number of errors / Total number of bits transmitted
Wrong error rate = 4 errors per second
Data rate = 4 kbps (4 kilobits per second)
BER= 4 / 4000 = 0.001

Quiz navigation

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5 6 7 8
9 10

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