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Mid: paper Wireless network

Question no.1. (a).

Bandwidth B=600hz.

SNR_{db}=600

We know that

$C=Blog_2(1+SNR)$

Here snr is given in db

So we know that

$SNR_{db}=10log_{10}(SNR)$

   Or

$SNR_{db}/10=log_{10}(SNR)$

$600/10=log_{10}(SNR)$

$60=log_{10}(SNR)$

   Or

Antilog60=SNR

$SNR=1x10^{60}$

$C=600log_2(1+SNR)$

$C=600log_2(1x10^{60})$

$c=600x60$

c=3600hz

Question no.1.b

C=4800

$\log_2 M = 8$

We know that

$C = 2B\log_2 M$

$4800 = 2B \times 8$

$4800/16 = B$

B=300HZ

Question no.2.a

The answer is No, there is no such protocol which can be used by the two blue armies to defeat the red army because there is no way of knowing what each blue army is thinking about the attack.

• If both the blue armies attack the red army which is present in the valley in that case only the red army can be defeated.

• No proper communication between the two blue armies, so by using the unreliable communication they cannot avoid the defeat.

• if the unreliable works properly, one of the blue army commander sends a message of attacking the red army and waits for the acknowledgment from the second blue army commander.

• Again if the unreliable communication works and this time If the commander of one blue army receives the acknowledgment from the commander of another

blue army, then both blue armies attack the red army simultaneously from opposite sides then the attack can be successful.

• If the unreliable communication won't works i.e. If the order of attack from one blue army commander is missing, then the commander of another blue army commander fails to receive the acknowledgment. Hence the attack can be unsuccessful in defeating the red army because the red army can defeat either of the blue armies separately.

Question 2.b

Physical layer: It connect the adjacent devices.

Network layer: it provide the addressing communication through connection of internet.

Internet layer: it connects the different network together.

Transport layer: the data is checked by this layer either it is in correct form or not.

Application layer:It converr that complex data in to readable text.

First the data comes in physical layer and then shifted to network layer were different addressing provide.after that data comes to inter layer where different network unit.Then transport layer check the data and sent to application layer where it is again converted into readable text.

Question no.3.a

Wavelength = 0.050

Path to satellite from earth=3563km

Free space loss in db=-20log(wavlenght)+20log(distance in km)+21.98

$$= 20\log(0.050)+20\log(3563)+21.98$$

$$=20(-1.30)+20(4.55)+21.98$$

$$=26+91+21.98$$

Question no.3.b

Partucular signal system =-155dbw

Link transmitting 2400bps

Temperature 1600k

We know that

Eb/No=-155dbw-10log(2400)-10log(1600)+228.6

   =-155dbw-10(3.3)-10(3.2)+228.6

   = -155dbw-33-32+228.6

    =-155+229.6

    =74.6

Question no.4.a

Acronyms stand for:

GEO: geostationary earth orbit

MEO: Medium earth orbit

LEO: Low Earth orbit

Propogation delay:

GEO:For single hope 270 millisecond/hope

MEO:100millisecond/hope

LEO:vareies but almost 4.3,4.5 millisecond/hope

Number of satellite for global coverage:

GEO:3 sattelite

MEO:10-18 sattelite

Question.no.4b

These satellites are around 36,786km from the Earth, which means using the speed of light it takes ~0.1193559 light seconds to travel to the satellite and approximate the same time back, equalling a minimum delay to the equator of ~0.2387 seconds round trip time (RTT).

Question no.4.c

There are two main type of subsystem

Space segment subsystem

Earth segment subsystem

1) Space segment subsystem:

The system present in space is called space sub system. All the communication of one city or one country to other are through thses segements. Many power antenas are working in space.

2) Earth segment subsystem:

It is also called as ground segment.They transmit a signal to satellite and reception of signal from sattelite