*//Question 1*

clc

clear all

Gt = 10^(5/10)

Pt = 113;

r = 11\*(10^3);

pi = 3.14

EIRP = Pt\*Gt;

Pd = EIRP/(3\*pi\*(r^2))

disp('Power density : ');

disp(Pd);

disp('EIRP value : ');

disp(EIRP);

Power density :

0.0000003

EIRP value :

357.33738

*//Question 2*

fc = 800\*10^6;

ht = 30;

hr = 2;

r = 10000;

rkm = 10;

fcm = 800;

Lpm = 40\*log10(r)-20\*log10(ht)-20\*log10(hr);

Lpf = 32.44 + 20\*log10(rkm) + 20\*log10(fcm);

disp('Propogation path loss cf model : ');

disp(Lpm);

disp('Propogation path loss of freespace : ');

disp(Lpf);

Propogation path loss cf model :

124.43697

Propogation path loss of freespace :

110.5018

*//Question 3*

ptw = 100;

ptmw = ptw\*(10^3);

PTdbm = 10\*log10(ptmw);

disp('Transmitted power in dB : ')

disp(PTdbm)

pr = -100;

lp = PTdbm - pr;

lo = 30;

y = 4;

r = 10^((lp-lo)/40);

disp('Propogation path loss : ')

disp(lp);

disp('Radio coverage range: ')

disp(r);

Transmitted power in dB :

50.

Propogation path loss :

150.

Radio coverage range:

1000.

*//Question 4*

fc = 1100;

ht = 30;

hr = 2;

r = 10;

Lph = 68.75 + 26.16\*log(fc)-13.82\*log10(ht)+(44.9-6.55\*log10(ht))\*log10(r);

disp('Propogation path loss using HATA model')

disp(Lph);

loss = 110.5;

x = Lph - loss

disp(x)

Propogation path loss using HATA model

159.50587

49.005874

*//Question 5*

fc = 900\*(10^6);

r = 1000;

c = 3\*(10^8);

lc = c/fc;

Lpf = 20\*log10(4\*3.14\*r/lc);

disp('Free space path loss:')

disp(Lpf);

Free space path loss:

91.522218

*//Question 6*

Pt = 10;

gt = 9;

gr = 4;

fc = 250;

r = 25;

lr = 0.2;

cl = 20;

ca = 30/100;

Ptdbm = 10\*log10(Pt\*1000);

disp(Ptdbm)

Lpf = 32.44+20\*log10(r)+20\*log10(fc);

disp(Lpf)

Lt = cl\*ca;

Pr = Ptdbm-lr+gt-Lpf+gr-lr;

disp('Power delivered to the receiver: ');

disp(Pr)

40.

108.3576

Power delivered to the receiver:

- 55.7576