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NPTEL

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Courses » Satellite Communication

Announcements

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Unit 4 - Week 3

Course outline

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Assignment-3

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2017-09-13, 23:59 IST

5 points

1)
For a 4.0 GHz downlink link, if satellite TWTA power output is 10 dBW, or antenna gain is 34 dB and Feeder loss is 1 dB then the satellite EIRP on earth dB contour edge of coverage will be

- A. 55 dBw
- B. 50 dBw
- C. 45 dBw
- D. 40 dBw

No, the answer is incorrect.

Score: 0

Accepted Answers:

D. 40 dBw

2)
A DTH terminal is located at Goa at -2 dB contour edge of satellite transmit antenna footprint. Assuming path loss difference is negligible, for same C/N how much DTH antenna gain is to be changed if it is shifted to Port Blair at -9 dB contour of satellite transmit antenna footprint.

- A. The antenna gain has to increased by 7 times
- B. The antenna gain has to reduced by 7 times
- C. The antenna gain has to increased by 5 times
- D. The antenna gain has to reduced by 5 times

No, the answer is incorrect.

Score: 0

Accepted Answers:

C. The antenna gain has to increased by 5 times

3)
Find the EIRP of the downlink operating at 4 GHz. The antenna has effective aperture area of 10 sq-meters and 10 Watts of power is given input to it.

- A. 43.5 dBw
- B. 43.5 dBm
- C. 53.5 dBm
- D. 53.5 dBw

No, the answer is incorrect.

Score: 0

Accepted Answers:

D. 53.5 dBw

4)

5 points

A receiver at 290K is having noise figure of 4 dB. The noise power density of receiver is

- A. -228.6 dBw/Hz
- B. -170 dBm/Hz
- C. -202.2 dBw/Hz
- D. -100 dBw/Hz

No, the answer is incorrect.

Score: 0

Accepted Answers:

C. -202.2 dBw/Hz



5)

5 points

The effective input noise temperature of a earth station receiver is 30K when the of noise contributions from antenna and feeder were not taken into consideration the receiver is fed from an antenna having a noise temperature of 50K via a feeder with a loss of 2.5 dB, determine the noise temperature of the receiver considering effect of antenna and the feeder noise contribution. Assume $T_0 = 290$ K

- A. 28.1 K
- B. 126.9 K
- C. 185 K
- D. 155 K

No, the answer is incorrect.

Score: 0

Accepted Answers:

C. 185 K

6)

5 points

A certain 6 GHz satellite uplink has the following data: Earth station EIRP= 80 dB; Earth station to satellite distance =35780 Km; attenuation due to atmosphere = 1.5 dB; satellite antenna's aperture area=0.5 sq-meter; satellite receiver's system noise temperature = 290 K; satellite receiver's bandwidth= 20 MHz. Determine the link margin for satisfactory quality of service if the threshold value of received carrier to noise ratio is 25 dB.

- A. 18.9 dB
- B. 16.8 dB
- C. 14.2 dB
- D. none of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

A. 18.9 dB

7)

5 points

A LNB with gain of 12 dB, a bandwidth of 150 MHz and a noise figure of 4 dB is connected to a receiver with equivalent noise temperature of 900 K. Determine the noise figure of the overall system.

- A. 4.71
- B. 5.1

- C. 3.2
- D. 2.71

No, the answer is incorrect.

Score: 0

Accepted Answers:

D. 2.71

8)

An RF amplifier has 20 dB gain and 1 GHz bandwidth. Hot and cold load temperatures (T_1 and T_2) and corresponding amplifier output powers (N_1 and N_2) were measured as at $T_1 = 290$ K, N_1 is -62 dBm and at $T_2 = 77$ K, N_2 is -64.7 dBm. If the amplifier is used with input source temperature $T_s = 450$ K, Find the output noise power.

- A. -100 dBw
- B. -60 dBw
- C. -100 dBm
- D. -60 dBm

No, the answer is incorrect.

Score: 0

Accepted Answers:

D. -60 dBm

9)

In a satellite link, operating in 11 GHz, the power received by the earth station is -100 dBw. The power amplifier of the satellite supplies 100 watts power to the antenna. Determine the diameter of the down link antenna of the satellite if the gain of the earth station is 1.7 dBi. Assume the downlink satellite antenna has efficiency of 0.5 and the path loss occurred is 205 dB.

- A. 2.8 meter
- B. 8.2 meter
- C. 4.2 meter
- D. 2.6 meter

No, the answer is incorrect.

Score: 0

Accepted Answers:

B. 8.2 meter

You were allowed to submit this assignment only once.

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