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Courses » Satellite Communication

Announcements

Course

Ask a Question

Progress



Unit 5 - Week 4

Course outline

How to access the portal ?

Week 1

Week 2

Week 3

Week 4

Quiz : Assignment-4

Lecture 16: Link Budget - 6

Lecture 17: Link Budget - 7

Lecture 18 : Link Budget - 8

Lecture 19: Propagation - 1

Lecture 20 : Propagation - 2

Solution of Assignment- 4

Week 4: Assignment Solution

Week 5

Week 6

Week 7

Week 8

Assignment-4

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

Due on 2017-09-20, 23:59 IST

5 points

1) A satellite link has same carrier to noise ratio in uplink as well as in down link. over all Carrier to noise ratio of the link will be

- A. always less than that of individual
- B. always greater than that of individual
- C. equal to the individual one
- D. unpredictable

No, the answer is incorrect.

Score: 0

Accepted Answers:

A. always less than that of individual

5 points

2) If 500 watt of RF power fed to an earth station antenna saturates a transponder h SFD of -86 dBw/sq-meter at a distance of 40000 Km, then the earth station tra antenna gain is

- A. 40 dB
- B. 50 dB
- C. 60 dB
- D. 70 dB

No, the answer is incorrect.

Score: 0

Accepted Answers:

B. 50 dB

5 points

3) A geostationary satellite has an elevation angle of 35^0 with respect to a part earth station at mean sea level. The earth station is operating at 4 GHz dow frequency. The specific attenuation due to stratiform rainfall in the downlink dB/Km. Determine the signal attenuation in the downlink assuming rain heigh Km.

- A. 10.5 dB
- B. 7.3 dB
- C. 5.4 dB
- D. 4.1 dB

No, the answer is incorrect.

Score: 0

Accepted Answers:

B. 7.3 dB

4)

5 points

A standard earth station with G/T of 30 dB/K receives a signal measures the of a satellite beacon as 90 dBHz, whereas the C/N_0 of the same beacon is measured at the same location by a VSAT receiver is 70 dBHz. Determine the G/T of the VSAT station receiver.

- A. 10 dB/K
- B. 11 dB/K
- C. 12 dB/K
- D. 13 dB/K

No, the answer is incorrect.

Score: 0

Accepted Answers:

A. 10 dB/K



5)

5 points

In a point-to-point satellite communication system, the carrier signal at the satellite as received over uplink is 40 dB greater than the strength of the interference signal from an interfering Earth station. Also, the strength of the signal power received at the desired Earth station over the downlink is 35 dB more than the strength of the interference signal due to an interfering satellite. Determine the total carrier-to-interference ratio of the satellite link.

- A. 30 dB
- B. 34 dB
- C. 40 dB
- D. 44 dB

No, the answer is incorrect.

Score: 0

Accepted Answers:

B. 34 dB

6)

5 points

Assume that the noise power associated with a GPS signal over 2 MHz bandwidth is -141 dBW. If there are 10 satellites visible to the receiver and for simplicity assume that the power from each satellite at the receiver is -160 dBW, what is the SNR (including interference) at the receiver output?

- A. -19 dB
- B. 19 dB
- C. -15 dB
- D. 15 dB

No, the answer is incorrect.

Score: 0

Accepted Answers:

A. -19 dB

7)

5 points

A multiple carrier satellite Transponder operating at 6 GHz uplink and 4 GHz downlink has Transponder Saturation Flux Density of -67.5 dBW/sq-meter and corresponding saturated EIRP of 26.6 dBW. The transponder is operating at 12 dB Input Back-off. The satellite power amplifier characteristics specify that for every dB of Input Back-off the Output Back-off changes by 0.5 dB. If Satellite G/T is -11.6 dB/K, satellite earth station range is 40800 Km and Earth Station G/T is 40.7 dB/K, find total C/N_0 .

- A. 98.9 dBHz
- B. 92.5 dBHz

- C. 90.4 dBHz
- D. 96.2 dBHz

No, the answer is incorrect.

Score: 0

Accepted Answers:

B. 92.5 dBHz

8)

5 points

A receive antenna observes rain attenuation of 7 dB. The receiver noise figure is 2 dB and receive antenna gain is 40 dBi. Using power control FMT, how much increase in downlink power is required? Assume negligible clear sky noise temperature and rain as 275 K and T_0 for receiver as 290 K.

- A. 7.32 dB
- A. 7.32 dB
- C. 10.65 dB
- D. 12.78 dB

No, the answer is incorrect.

Score: 0

Accepted Answers:

C. 10.65 dB

9)

5 points

Assume rain rate is same for two locations A and B, which are situated on the longitudes of a GEO satellite. Station A is 40° N and station B is at 41° N and the stations have same altitudes. For equal rain height, the rain attenuation from stations to satellite link will be

- A. $A > B$
- B. $A = B$
- C. $A < B$
- D. Can not be determined

No, the answer is incorrect.

Score: 0

Accepted Answers:

C. $A < B$

10)

5 points

If at End Of Life (EOL) LNA gain of an earth station is expected to decrease by 3 dB from the beginning of its operation, but the antenna gain remains same, then G/T of the earth station at EOL will

- A. Remain same
- B. Increase
- C. Decrease
- D. None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

C. Decrease

You were allowed to submit this assignment only once.

Previous Page

End

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