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NPTEL

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Courses » Satellite Communication

Announcements

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Unit 7 - Week 6

Course outline

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- Quiz : Assignment-6
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Assignment-6

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

Due on 2017-10-04, 23:59 IST

5 points

1) A 36 MHz bandwidth limited transponder is allotted with voice only carrier in F mode with 45 KHz separation between centre frequency of carriers. Assuming voice activity, what will be the number of carriers?

- A. 320
- B. 600
- C. 180
- D. none of these

No, the answer is incorrect.
Score: 0

Accepted Answers:

A. 320

2)

A satellite based CDMA system operating on full transponder, needs $\frac{E_b}{N_0}$ of 6 dB. much processing gain is required if the total multiple access interference power is times more than that of each carrier power?

5 points

- A. 20 dB
- B. 22 dB
- C. 24 dB
- D. 26 dB

No, the answer is incorrect.
Score: 0

Accepted Answers:

D. 26 dB

3)

In a DS-CDMA system, the information bit rate and chip rate are respective Kbps and 20 Mbps. The processing gain of the system will be

5 points

- A. 30 dB
- B. 40 dB
- C. 20 dB
- D. 10 dB

No, the answer is incorrect.
Score: 0

Accepted Answers:

A. 30 dB

4)

5 points

A 36 MHz transponder has maximum EIRP of 50 dBw and has multiple carriers. Receive station G/T is -10 dB/K, free space loss is 192 dB, miscellaneous losses are 6.6 dB. Each 10 KHz carrier needs 45 dBHz C/N_0 . Find number of carriers supported by the transponder.

- A. 3600
- B. 3000
- C. 316
- D. 317

No, the answer is incorrect.

Score: 0

Accepted Answers:

C. 316

5)

5 points

A satellite link operating with TDMA transmits data at a rate of 120 Mbps. The link has 15 channels and uses 11088 bits as overhead bits in total. Assuming the frame duration of 2 milliseconds, determine the frame efficiency of the TDMA link.

- A. 80%
- B. 85%
- C. 90%
- D. 95%

No, the answer is incorrect.

Score: 0

Accepted Answers:

D. 95%

6)

5 points

For the downlink transmission equation of full transponder TDMA system, what is the correct expression in dBHz for maximum bit rate that can be supported in a power limited transponder?

- A. $\text{Bit rate} = \text{EIRP}_{\text{satellite}} + (G/T)_{\text{(earth station)}} - L_{\text{uplink}} - k$
- B. $\text{Bit rate} = \text{EIRP}_{\text{satellite}} + (G/T)_{\text{(earth station)}} - L_{\text{downlink}} - k$
- C. $\text{Bit rate} = \text{EIRP}_{\text{satellite}} + (G/T)_{\text{(earth station)}} - L_{\text{downlink}} - k - (E_b/N_0)$
- D. none of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

C. $\text{Bit rate} = \text{EIRP}_{\text{satellite}} + (G/T)_{\text{(earth station)}} - L_{\text{downlink}} - k - (E_b/N_0)$

7)

5 points

From each station, 24 terrestrial channels are multiplexed in TDM to transmit a carrier with BPSK modulation, bit rate of 1.544 Mbps, 20% filter roll off factor, 20% guard band. The required C/N per carrier is 5.5 dB and total C/N₀ that the transponder can support for a full transponder operation is 81 dBHz. Find the number of carriers supported by a transponder.

- A. 10
- B. 15
- C. 20
- D. 12

No, the answer is incorrect.

Score: 0

Accepted Answers:



B. 15

8) 5 points
 A power and bandwidth balanced sharing transponder has 3 carriers in FDMA, 1 watt saturated output power with output back off of 3 dB. The bandwidth required by one of the stations is 15 MHz which is 50% of the total transponder bandwidth. Find power level required by this carrier.

- A. 20 dBw
- B. 15 dBw
- C. 10 dBw
- D. 5 dBw

No, the answer is incorrect.

Score: 0

Accepted Answers:

C. 10 dBw

9) 5 points
 For a bandwidth limited transponder the bandwidth and EIRP are 36 MHz and 10 dBw respectively. Receive $G/T = 30$ dB/K, Losses = 198.6 dB. Each carrier requires a bandwidth of 1 MHz and the system requirement of C/N_0 is 65 dBHz. Find number of carriers that can be supported.

- A. 34
- B. 36
- C. 38
- D. 40

No, the answer is incorrect.

Score: 0

Accepted Answers:

B. 36

10) 5 points
 Find the number of voice channels for a TDMA link with $C/N_0 = 85.5$ dBHz, $E_b/N_0 = 8.5$ dB, TDMA frame efficiency of 85%, and voice channel rate of 64 Kbps.

- A. 665
- B. 666
- C. 667
- D. 668

No, the answer is incorrect.

Score: 0

Accepted Answers:

A. 665

You were allowed to submit this assignment only once.

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