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NPTEL

reviewer2@nptel.iitm.ac.in ▼

Courses » Satellite Communication

Announcements

Course

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Unit 6 - Week 5

Course outline

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Quiz : Assignment-5

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Solution of Assignment-5 (Text)

Week 5: Assignment Solution

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Assignment-5

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

Due on 2017-09-27, 23:59 IST

5 points

1) An earth station receiving at 20 GHz from a satellite at 20° elevation, has link ability of 99.9% and it experiences 11.31 dB attenuation during rain. What will be the diversity gain in dB when a diversity station is added at a distance of 10 Km baseline orientation angle of 85° to satellite.

- A. 3.69
- B. 5.84
- C. 8.53
- D. 9.63

No, the answer is incorrect.

Score: 0

Accepted Answers:

B. 5.84

5 points

2) What is meant by F in direct method of G/T measurement using Y factor, which is expressed as $\frac{G}{T_s} = \frac{(Y-1)8\pi k}{F\lambda^2}$?

- A. noise figure
- B. flux density of radio star
- C. failure rate
- D. none of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

B. flux density of radio star

5 points

3) For a given earth station $\frac{D}{\lambda} = 75$, as per ITU mask for earth station reference antenna radiation, the gain $G(\theta)$ in dB at θ degree away from peak gain in dB will be.

- A. 29
- B. 30
- C. 31
- D. 32

No, the answer is incorrect.

Score: 0

Accepted Answers:

D. 32

5 points

4)

A VSAT network is allotted 42 dBw in a linearized transponder. The network operate with two carriers from Hub to support many VSAT carriers. The two carrier need 36dBw each. And each VSAT carrier need 26 dBw. How many VSAT carriers can be accommodated in the transponder?

- A. 20
- B. 17
- C. 21
- D. 19

No, the answer is incorrect.

Score: 0

Accepted Answers:

D. 19

5) Why most of the VSAT antennas use offset feed mount?

5 points

- A. To maintain the balance in the antenna setup
- B. To increase the efficiency of the antenna above 80%
- C. To minimize the signal blockage
- D. none of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

C. To minimize the signal blockage

6)

5 points

A satellite link in clear sky is using 8-PSK modulation scheme. It is needed to counter the modulation scheme to counter the rain fade. Find out the suitable modulation scheme amongst the following

- A. BPSK
- B. 16-PSK
- C. 32-PSK
- D. 64-PSK

No, the answer is incorrect.

Score: 0

Accepted Answers:

A. BPSK

7)

5 points

To improve the single site attenuation of 10.31 dB at annual link availability of 99.99% a second site is added to get diversity gain of 5.84 dB. What is the joint site attenuation for the same link availability?

- A. 3.56 dB
- B. 4.47 dB
- C. 5.78 dB
- D. 9.40 dB

No, the answer is incorrect.

Score: 0

Accepted Answers:

B. 4.47 dB

8)

5 points



Using radio star based G/T measurement, where, F is radio star flux density, the antenna effective aperture and f is the frequency. The noise power ratio Y is as

- A. $Y = \frac{FA_e}{2kT_s}$
- B. $Y = 1 + \frac{FA_e}{2kT_s}$
- C. $Y = 1 - \frac{FA_e}{2kT_s}$
- D. $Y = 1 + \frac{2FA_e}{3kT_s}$

No, the answer is incorrect.

Score: 0

Accepted Answers:

B. $Y = 1 + \frac{FA_e}{2kT_s}$

9)

5 points

Earth station transmit power amplifier output is monitored through a 20 dB coupler. When a power meter shows 1 watt power at the coupler output, what was the amplifier output in dBW?

- A. 19
- B. 20
- C. 21
- D. 22

No, the answer is incorrect.

Score: 0

Accepted Answers:

B. 20

10)

5 points

ITU recommends that ground station antenna Side lobes (for $\theta = 1^\circ$ to 20° and $\frac{D}{\lambda} \geq 50$) should be restricted such that 90% of Side lobe peak should not exceed relation

- A. $G(\theta) = 32 - 25 \log \theta$
- B. $G(\theta) = 31 - 25 \log \theta$
- C. $G(\theta) = 30 - 25 \log \theta$
- D. $G(\theta) = 29 - 25 \log \theta$

No, the answer is incorrect.

Score: 0

Accepted Answers:

D. $G(\theta) = 29 - 25 \log \theta$

You were allowed to submit this assignment only once.

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