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Courses » Satellite Communication

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Unit 2 - Week 1

Course outline

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Assignment-1

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

Due on 2017-09-03, 23:59 IST

Instructions

- i. Multiple choices of each questions are marked as A to D. Only one answer is unambiguously correct. Choose the most appropriate one.
- ii. Assume spherical earth with average radius of 6378 Km.

1)

5 points

Determine the rise in antenna noise temperature of a 10 GHz receiver with antenna efficiency of 60% and beamwidth of 10 degrees.

- A. 2.274K
- B. 22.74K
- C. 227.4K
- D. 22274K

No, the answer is incorrect.

Score: 0

Accepted Answers:

C. 227.4K

2)

5 points

A Satellite is orbiting in an elliptical orbit with apogee height at 400 Km. The ratio of velocity at perigee to apogee is

- A. 3.89
- B. 7.07
- C. 15.15
- D. 2.56

No, the answer is incorrect.

Score: 0

Accepted Answers:

A. 3.89

3)

5 points

A satellite is orbiting in a circular orbit which is 1000 km above the surface of the earth. Then how many times in a day, the satellite crosses the same location on the earth.

- A. 16 times
- B. 15 times
- C. 14 times
- D. 13 times

No, the answer is incorrect.

Score: 0

Accepted Answers:

D. 13 times

4)

5 points

A satellite is orbiting in an elliptical orbit. Thus a good statement is

- A. the velocity at apogee is greater than that of perigee
- B. the velocity at apogee is less than that of perigee
- C. velocity at perigee is minimum
- D. velocity at apogee is maximum

No, the answer is incorrect.

Score: 0

Accepted Answers:

B. the velocity at apogee is less than that of perigee

5)

5 points

Determine the orbital height in Km of a satellite whose orbital period is equal to a sidereal day.

- A. 42164 Km
- B. 36712 Km
- C. 42379 Km
- D. 35786 Km

No, the answer is incorrect.

Score: 0

Accepted Answers:

D. 35786 Km

6)

5 points

The difference between the farthest and the closest from the surface of the earth is 30000 Km, and the if the mean radius of the earth is considered to be 64 and length of semi-major axis of the orbit.



- A. 0.32 & 31500 Km
- B. 0.48 & 31400 Km
- C. 0.61 & 31500 Km
- D. 0.27 & 31400 Km

No, the answer is incorrect.

Score: 0

Accepted Answers:

B. 0.48 & 31400 Km

7)

5 points

A satellite is in a circular equatorial orbit moving in the same rotation with a period 24 hours exactly. Determine the rate point around the equator in degrees per solar day.

- A. 0.5 degree towards east
- B. 0.5 degree towards west
- C. 0.98 degree towards west
- D. 0.98 degree towards east

No, the answer is incorrect.

Score: 0

Accepted Answers:

C. 0.98 degree towards west

8)

5 points

Determine the visibility arc on earth equator from a geostationary orbit

- A. 5.7°E to 168.3°E
- B. 87°E to 168.3°E
- C. 163.3°W to 8.7°W
- D. Cannot be determined

No, the answer is incorrect.

Score: 0

Accepted Answers:

A. 5.7°E to 168.3°E

9)

5 points

A satellite is moving in an elliptical orbit with the Km. If the perigee distance is 6978 Km, find the apo

- A. 30000 Km, 0.62
- B. 42164 Km, 0.9
- C. 35786 Km, 0.72
- D. 42164 Km, 0.72

No, the answer is incorrect.

Score: 0

Accepted Answers:

C. 35786 Km, 0.72

10)

An earth station at IIT Kharagpur campus (22°N , 85°E) located at 93°E . Select the correct option for the Elevation and distance to the satellite. Assume the radius of the earth is 6378 Km and orbit height of INSAT is 35786 Km.

- A. Elevation= 63.34° , Azimuth= 164.33° and Distance=35786 Km
- B. Elevation= 31.34° , Azimuth= 195.67° and Distance=35786 Km
- C. Elevation= 63.34° , Azimuth= 165.67° and Distance=35786 Km
- D. none of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

A. Elevation= 63.34° , Azimuth= 164.33° and Distance=35786 Km

11)

A satellite in circular orbit with 1000 Km orbital radius is moving in the same direction as the earth station in the plane of the satellite orbit receives the signal. The Doppler shift of the received signal is rising from horizon. The Doppler shift of the received signal is

- A. +50 KHz to +55 KHz
- B. -50 KHz to -60 KHz
- C. +55 KHz to +60 KHz
- D. -55 KHz to -65 KHz

No, the answer is incorrect.

Score: 0

Accepted Answers:



C. +55 KHz to +60 KHz

12)

5 points

A satellite was launched from a satellite launching pad located at azimuth 102° and was launched into a Geosynchronous Transfer Orbit with perigee at 250 Km and apogee at Geosynchronous height. Determine the velocity required to place the satellite in Geostationary orbit.

- A. 1.63 Km/s
- B. 2.64 Km/s
- C. 4.56 Km/s
- D. none of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

A. 1.63 Km/s

You were allowed to submit this assignment only once.

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