

Satellite Communication

Multiple Choice Question Bank

- Q1. A television (TV) transmission is an example of which type of transmission?
- a) **Simplex**
 - b) Half duplex
 - c) Full duplex
 - d) None of the above
- Q2. INTELSAT stands?
- a) **International Telecommunications Satellite**
 - b) India Telecommunications Satellite
 - c) Inter Telecommunications Satellite
 - d) None of the above
- Q3. Kepler's first law states?
- a) **The path followed by a satellite around the primary will be an ellipse.**
 - b) The path followed by a satellite around the primary will be a circle.
 - c) The path followed by a satellite around the primary will be a sphere
 - d) None of the above
- Q4. The eccentricity e is given by?
- a) $e = \sqrt{1 - \frac{b^2}{a^2}}$
 - b) $e = \sqrt{1 - \frac{a^2}{b^2}}$
 - c) $e = \sqrt{1 - \frac{b^2}{a^2}} \cos \theta$
 - d) None of the above
- Q5. For an elliptical orbit?
- a) $0 < e < 1$.
 - b) $e = 0$
 - c) $e = 1$
 - d) None of the above
- Q6. Kepler's second law states?
- a) **If $t_2 - t_1 = t_4 - t_3$, then $A_{12} = A_{34}$.**
 - b) If $t_2 + t_1 = t_4 + t_3$, then $A_{12} = A_{34}$.
 - c) If $t_2/t_1 = t_4/t_3$, then $A_{12} = A_{34}$.

d) None of the above

Q7. Kepler's third law states?

a) $T^2 \propto a^3$.

b) $T^3 \propto a^2$

c) $T^2 \propto a^{3/2}$

d) None of the above

Q8. The orbital period in seconds?

a) $P = 2\pi / n$.

b) $P = 2\pi / n^2$

c) $P = \pi / n$

d) None of the above

Q9. Calculate the radius of a circular orbit for which the period is 1 day?

a) **42.241Km**

b) 42.241m

c) 4.241Km

d) 2.241Km

Q10. Apogee?

a) **The point farthest from earth**

b) The point nearest from earth

c) The point smallest from earth

d) None of the above

Q11. Perigee?

a) The point farthest from earth

b) The point longest from earth

c) **The point closest approach to earth**

d) None of the above

Q11. Ascending node?

a) **The point where the orbit crosses the equatorial plane going from south to north**

b) The point longest from earth

c) The point closest approach to earth

d) None of the above

Q12. Argument of perigee?

- a) **The angle from ascending node to perigee, measured in the orbital plane at the earth's center, in the direction of satellite motion.**
- b) The point longest from earth
- c) The point closest approach to earth
- d) None of the above

Q13. True anomaly?

- a) **The true anomaly is the angle from perigee to the satellite position, measured at the earth's center.**
- b) The point longest from earth
- c) The point closest approach to earth
- d) None of the above

Q14. The down link frequency in the C band transponder is

- (A) 6 GHz **(B) 4 GHz**
- (C) 14 GHz (D) 11 GHz

Q15. The carrier to noise ratio for a satellite depends upon

- (A) Effective Isotropic Radiated power
- (B) Bandwidth.
- (C) Free space path losses
- (D) All of them**

Q16. The multiple access technique suitable only for digital transmission is

- (A) **TDMA** (B)FDMA
- (C)Both (A)and (B) (D)Packet Access

Q17. What is application of satellite systems?

- a) **whether forecasting**
- b) Terrestrial communication
- c) point to point communication
- d) None of the above

18. Mention the different services of satellite systems.

- a) **Broadcasting satellite services**
- b) Signal transmission
- c) Information transmission
- d) None of the above

19. Define Polar-orbiting Satellites.

(a) Polar orbiting Satellites orbit the earth in such a way as to cover the north & south Polar Regions.

b) Orbiting Satellites orbit the earth in such a way as to cover the east & west Polar Regions

c) Either (a) & (b)

d) None of the above

20. Mention the apogee height.

(a) $r_a = a(1+e)$, $H_a = R - r_a$

(b) $r_a = a(1+e)$, $H_a = R - r_p$

(c) $r_a = a(1+e)$, $H_a = r_a - R$

(d) None of above

21. Mention the perigee height.

(a) $r_p = a(1+e)$, $H_p = R - r_p$

(b) $r_p = a(1+e)$, $H_a = R - r_a$

(c) $r_p = a(1+e)$, $H_a = r_p - R$

(d) None of above

22. Define Universal time.

(a) It is the time used for all civil time keeping purposes & it is the time reference which is broadcast by the national bureau of standards as a standard for setting clocks.

(b) It is the time used for all private time keeping purposes & it is the time reference which is broadcast by the national bureau of standards as a standard for setting clocks.

(c) It is the time used for all civil time keeping purposes & it is the time reference which is not broadcast by the national bureau of standards as a standard for setting clocks.

(d) None of above

23. Define Universal time day.

(a) $UT\ day = 1/24(hours + minutes/60 + seconds/3600)$

(b) $UT\ day = 1/24(hours + minutes + seconds/3600)$

(c) $UT\ day = 1/24(hours + minutes/6 + seconds/360)$

(d) None of above

24. Mention the Julian dates.

(a) $JD = JD_0 + \text{day number} + \text{Utday}$

(a) $JD = JD_0 + \text{Utday}$

(a) $JD = JD_0 + \text{day number}$

(d) None of above

25. what is sidereal time?

(a) Sidereal time is time measured relative to the fixed stars. It will be seen that one complete rotation sidereal time relative to the sun .This is because the earth moves in its orbit around the sun.

(b) Sidereal time is time measured relative to the variable stars. It will be seen that one complete rotation sidereal time relative to the sun .This is because the earth moves in its orbit around the sun.

(c) Sidereal time is time measured relative to the fixed stars. It will be seen that one complete rotation sidereal time relative to the moon .This is because the earth moves in its orbit around the moon.

(d) None of above

26. Define Sidereal day.

(a) It is defined as one complete rotation rotation of the earth relative to the fixed stars. It is measured as $23^h56^m04^s$ mean solar time.

(b) It is defined as one and half rotation of the earth relative to the fixed stars. It is measured as $23^h56^m04^s$ mean solar time.

(c) It is defined as one complete rotation of the earth relative to the fixed stars. It is measured as 24^h mean solar time.

(d) None of above

27. Define Greenwich hour angle(GHA).

(a) The angular distance from the I axis to the Greenwich meridian is measured directly as Greenwich sidereal time, also known as the Greenwich hour angle.

(b) (a) The angular distance from the I axis to the Greenwich median is measured directly as Greenwich sidereal time, also known as the Greenwich hour angle.

(c) (a) The angular distance from the I axis to the Greenwich sidereal time, also known as the Greenwich hour angle.

(d) None of above

28. Write the formula for GST.

(a) $GST = 99.6910 + 36000.7689X_t + 0.0004X_t^2 + UT$ deg

(b) $GST = 9.6910 + 36000.7689X_t + 0.0004X_t^2 + UT$ deg

(c) $GST = 99.6910 + 36000.7689X_t + 0.0004X_t^2$

(d) None of above

29. Define geocentric latitude.

(a) At a point of interest for zero height, the angle $\psi_e(h=0) = (1 - Ee^2) \tan \lambda_E$

(a) At a point of interest for one height, the angle $\psi_e(h=0) = (1 - Ee^2) \tan \lambda_E$

(a) At a point of interest for zero height, the angle $\psi_e(h=0) = (1 - Ee^2) \tan \lambda$

(d) None of above

30. What is the difference between the geodetic & geocentric latitudes?

(a) The latitudes reach a maximum at a geocentric latitude of 45deg, when the geodetic latitude is 45.192deg.

(a) The latitudes reach a maximum at a geocentric latitude of 30deg, when the geodetic latitude is 45.192deg.

(a) The latitudes reach a maximum at a geocentric latitude of 45deg, when the geodetic latitude is 4.192deg.

(d) None of above

31. What is meant by azimuth angle?

(a) It is defined as the angle produced by intersection of local horizontal plane & the plane passing through the earth station, the satellite & center of earth.

(b) It is defined as the angle produced by intersection of local vertical plane & the plane passing through the earth station, the satellite & center of earth.

(c) It is defined as the angle produced by intersection of local horizontal plane & center of earth.

(d) None of above

32. What is an attitude control system.

(a) It is the system that achieves & maintains the required attitudes. The main functions of attitude control system include maintaining accurate satellite position throughout the life span of the system.

(b) The main functions of attitude control system include maintaining accurate satellite velocity throughout the life span of the system.

(c) It is the system that achieves & maintains the required attitudes. The main functions of attitude control system include maintaining accurate satellite acceleration throughout the life span of the system.

(d) None of above

33. What is an polar antenna?

(a) A single actuator is used which moves the antenna in a circular arc ie known as polar mount antenna.

(b) An double actuator is used which moves the antenna in a circular arc ie known as polar mount antenna.

(c) A single actuator is used which moves the antenna in a elliptical arc ie known as polar mount antenna.

(d) None of above

34. What is declination?

(a) The angle of tilt is often referred to as the declination which must not be confused with the magnetic declination used in correcting compass readings.

(b) The angle of tilt is often referred to as the declination which must be confused with the magnetic declination used in correcting compass readings.

(c) The angle of tilt is often referred to as the declination which must not be confused with the electric declination used in correcting compass readings.

(d) None of above

35. Define the terms in Eclipse.

(a) During equinox periods, the earth the sun & the satellite are in alignment with the result that earth' s shadow eclipses that satellite & the sunlight fails to reach the satellite solar cells.

(b) During equinox periods, the earth the sun & the satellite are in alignment with the result that earth' s shadow eclipses that satellite & the sunlight success to reach the satellite solar cells.

(c) a & b

(d) None of above

36. The eclipse effect is noticeable for periods.....

(a) The eclipse effect is noticeable for periods of about four weeks & the maximum daily eclipse duration is about 1.20hours.

(b) The eclipse effect is noticeable for periods of about one weeks & the maximum daily eclipse duration is about 12 hours.

(c) a & b

(d) None of above

37. What is meant by payload?

(a) The payload refers to the equipment used to provide the service for which the satellite has been launched.

(b) The payload refers to the equipment used to provide the service for which the satellite has been stabilize in orbit.

(c) a & b

(d) None of above

38. What is meant by transponder?

(a) In a communication satellite, the equipment which provides the connecting link between the satellite's transmit & receive antennas is referred to as the transponder.

(b) In a communication satellite, the equipment which provides the power supply is referred to as the transponder.

(c) a & b

(d) None of above

39. Describe the spin stabilized satellites.

(a) In a, spin stabilized satellites, the body of the satellite spins at about 30 to 100rpm about the axis perpendicular to the orbital plane.

(b) In a, spin stabilized satellites, the body of the satellite spins at about 300 to 1000 rpm about the axis perpendicular to the orbital plane.

(c) a & b

(d) None of above

40. What is meant by frequency reuse?

(a) The carrier with opposite senses of polarization may overlap in frequency this technique is known as frequency reuse.

(b) The carrier with same senses of depolarization may overlap in frequency this technique is known as frequency reuse.

(c) a & b

(d) None of above

41. What is meant by spot beam antenna?

(a) A beam generated by a communication satellite antenna of sufficient size that the angular spread of sufficient size that the angular spread of the energy in the beam is very small with the result that a region that is only a few hundred km in diameter is illuminated on earth.

(b) A beam generated by a communication satellite antenna of sufficient size that the angular spread of sufficient size that the angular spread of the energy in the beam is very slarge with the result that a region that is only a few hundred mm in diameter is illuminated on earth.

(c) Either a or b.

(d) None of above

42. What is an TWT A?

(a) The TWTAS are widely used in transponder to provide the final output power required to the trans tube & its power supplies.

(b) The TWTAS are widely used in transponder to provide the final input power required to the trans tube & its power supplies.

(c) Either a or b.

(d) None of above

43. What is meant by Inter modulation distortion?

(a) The AM/PM conversion is then a complicated function of carrier amplitudes, but in addition, the nonlinear transfer characteristic introduces a more serious form of distortion known as intermodulation distortion.

(b) The AM/PM conversion is then a complicated function of carrier amplitudes, but in addition, the nonlinear transfer characteristic introduces a less distortion known as inter-modulation distortion.

(c) Either a or b.

(d) None of above

44. Define input backoff.

(a) In order to reduce the intermodulation distortion, the operating point of the TWT must be shifted closer to the linear portion of the curve, the reduction in input power being referred to as i/p backoff.

(b) In order to reduce the inter-modulation distortion, the operating point of the TWT must be shifted closer to the linear portion of the curve, the reduction in output power being referred to as i/p back-off.

(c) Either a or b.

(d) None of above

45. Define diplexer.

(a) The transmit & receives signals are separated in a device known as diplexer.

(b) The transmit & receives signals are separated in a device known as diplexer

(c) Either a or b.

(d) None of above

46. What is an OMT?

(a) The polarization separation takes place in a device known as an ortho-coupler or orthogonal mode transducer.

(b) The polarization combiner takes place in a device known as an ortho-coupler or orthogonal mode transducer.

(c) Either a or b.

(d) None of above

47. What is an polarization interleaving?

(a) Overlap occurs between channels, but these are alternating polarized left hand circular & right hand circular to reduce interference to acceptable levels. This is referred to as polarization interleaving.

(b) Overlap occurs between channels, but these are alternating polarized left hand flat & right hand elliptical to reduce interference to acceptable levels. This is referred to as polarization interleaving.

(c) Either a or b.

(d) None of above

48. What is an SCPC?

(a) In a thin route circuit, a transponder channel (36MHz) may be occupied by a no. of single carriers, each associated with its own voice circuit.

(b) In a thin route circuit, a transponder channel (36mhz) may be occupied by a no. of double carriers, each associated with its own voice circuit.

(c) Either a or b.

(d) None of above

49. Define S/N ratio.

(a) The S/N introduced in the preceding section is used to refer to the ratio of signal power to noise power at the receiver output. This ratio is sometimes referred to as the post detector.

(b) The S/N introduced in the preceding section is used to refer to the ratio of signal power to noise power at the receiver input. This ratio is sometimes referred to as the post detector.

(c) Either a or b.

(d) None of above

50. What is noise weighting?

(a) Improve the post detection signal to noise ratio is referred to as noise weighting.

(b) Improve the pre detection signal to noise ratio is referred to as noise weighting.

(c) Either a or b.

(d) None of above

Improve the post detection signal to noise ratio is referred to as noise weighting.

51. What is an EIRP?

(a) It is a measure of radiated or transmitted power of an antenna. It can be completed from the antenna gain & the power fed to the antenna input.

(b) It is a measure of radiated or transmitted power of an antenna. It can be completed from the antenna gain & the power fed from the antenna output.

(c) Either a or b.

(d) None of above

52. Write the equations of losses for clear sky conditions.

(a) Losses=(FSL)+(RFL)+(AML)+(AA)+(PL)

- (b) Losses=(FSL)+(RFL)
- (c) Losses=(FSL)+(AML)+(AA)+(PL)
- (d) None of above

53. What is a noise power spectral density?

- (a) $N_0 = P_N/B_N = kT_N$ joules
- (b) $N_0 = B_N/P_N$
- (c) $N_0 = B_N/P_N = kT_N B_0$ joules
- (d) None of above

54. What is an Intermodulation noise?

- (a) Intermodulation distortion in high power amplifier can result in signal products which appear as noise & in fact is referred to as Intermodulation noise.
- (b) Intermodulation distortion in LNA can result in signal products which appear as noise & in fact is referred to as Intermodulation noise.
- (c) Intermodulation distortion in LNA & HPA can result in signal products which appear as noise & in fact is referred to as Intermodulation noise.
- (d) None of above

55. What are the types of antenna losses?

- (a) sky noise
- (b) Antenna losses
- (c) sky noise , Antenna losses
- (d) all of these

56. What is an antenna losses?

- (a) It is add to noise received as radiation & the total antenna noise temperature is in the sum of the equivalent noise temperature of all these sources.
- (b) It is add to noise received as radiation & the total antenna noise temperature is in the divider of the equivalent noise temperature of all these sources.
- (c) It is add to noise received as radiation is in the sum of the equivalent noise temperature of all these sources.
- (d) None of above

57. Define sky noise.

(a) It is a term used to describe the microwave radiation which is present throughout universe & which appears to originate from matter in any form, at finite temperature.

(b) It is a term used to describe the microwave radiation which is present throughout universe & which appears to originate from matter in any form, at infinite temperature.

(c) It is a term used to describe the microwave radiation which appears to originate from matter from any form, at infinite temperature.

(d) None of above

58. Define noise factor.

(a) An alternative way of representing amplifier noise is by means of its noise-factor. In defining the NF of an amplifier, denoted by N usually taken as 290K, $N_{0,out} = F G K T_0$

(b) In defining the NF of an amplifier, denoted by N usually taken as 290K, $N_{0,out} = K T_0$

(c) In defining the NF of an amplifier, denoted by N usually taken as 290K, $N_{0,out} = K K T_0$

(d) None of above

59. What is an Absorptive n/w?

(a) It is one which contains resistive elements. These introduce losses by absorbing energy from the signal & converting it to heat.

(b) It is one which contains active elements. These introduce losses by absorbing energy from the signal & converting it to heat.

(c) It is one which contains amplifier elements. These introduce losses by absorbing energy from the signal & converting it to heat.

(d) None of above

60. All examples of Absorptive networks?

(a) Resistive attenuators.

(b) Transmission lines.

(c) Waveguides

(d) all of these

61. Write the equation of system noise factor.

(a) $T_S = T_{ant} + T_{e1} + (L-1)T_0/G_1 + L(F-1)T_0/G_1$

(b) $T_S = T_{ant} + T_e + (L-1)T_0/G_1$

(c) $T_S = T_{ant} + L(F-1)T_0/G_1$

(d) None of above

62. Define saturation flux density.

(a) The flux density required at the receiving antenna to produce saturation of TWTA is termed the saturation flux density.

(b) The flux density required at the transmitting antenna to produce saturation of TWTA is termed the saturation flux density.

(c) a&b

(d) None of above

63. A satellite downlink at 12GHZ operates with a transmit power of 6w & an antenna gain of 48.2db. Calculate the EIRP in dBw.

(a) 56dBw

(b) 16dBw

(c) 56dB

(d) None of above

64. Calculate the gain of a 3m paraboloidal antenna operating at a frequency of 12GHZ. Assume an aperture efficiency of 0.5.

(a) 48.9dB

(b) 4.9dB

(c) 48.9dBHz

(d) None of above

65. The range between a ground station & a satellite is 42000km. Calculate the free space loss at a frequency of 6GHZ.

(a) 200.4db.

(b) 20.4db.

(c) 2.4db.

(d) None of above

66. An antenna has a noise temperature of 35k & its matched into a receiver which has a noise temp of 100k. Calculate the noise power densit.

- (a) $1.86 \times 10^{-21} \text{ J}$
- (b) $1.6 \times 10^{-25} \text{ J}$
- (c) $186 \times 10^{-21} \text{ J}$
- (d) None of above

67. An antenna has a noise temperature of 35k & its matched into a receiver which has a noise temp of 100k. Calculate the noise power density & the noise power for a BW of 36MHZ.

- (a) 0.067 pw
- (b) 0.07 pw
- (c) 67 pw
- (d) None of above

68. What is a single mode of operation?

(a) A transponder channel aboard a satellite may be fully loaded by a single transmission from an earth-station. This is referred to as a single access mode of operation.

(b) A transponder channel aboard a satellite may be fully loaded by a full duplex transmission channel from an earth-station. This is referred to as a single access mode of operation.

- (c) a&b
- (d) None of above

69. What are the methods of multiple access techniques?

- (a) TDMA
- (b) FDMA
- (c) a&b
- (d) None of above

70. What is in CDMA? & its types?

(a) In this method each signal is associated with a particular code that is used to spread the signal in frequency & or time.

(b) In this method all signal is associated with a particular code that is used to spread the signal in frequency & or time.

(c) a&b

(d) None of above

71. Types of CDMA?

(a) Spread spectrum multiple access

(b) pulse address multiple access

(c) a&b

(d) None of above

72. What is a thin route service?

(a) SCPC systems are widely used on lightly loaded routes, this type of service being referred to as a thin route service.

(b) SCPC systems are widely used on heavily loaded routes, this type of service being referred to as a thin route service.

(c) a&b

(d) None of above

73. What is an important feature of Intelsat SCPC system?

(a) The system is that each channel is voice activated. This means that on a two way telephone conversation only one carrier is operative at any one time.

(b) The system is that each channel is video activated. This means that on a two way telephone conversation only one carrier is operative at any one time.

(c) a&b

(d) None of above

74. What is an TDMA? What are the Advantage?

(a) Only one carrier uses the transponder at anyone time, & therefore intermodulation products, which results from the nonlinear amplification of multiple carriers are absent.

(b) Only one carrier uses the transponder at anyone time, & therefore inter-modulation products, which results from the nonlinear amplification of multiple carriers are present.

(c) a&b

(d) None of above

75. What is Advantage of a TDMA?

(a) The transponder traveling wave tube can be operated at maximum power o/p.

(b) The transponder traveling wave tube can be operated at saturation power o/p

(c) a&b

(d) None of above

76. What is preamble?

(a) **Certain time slots at the beginning of each burst are used to carry timing & synchronizing information. These time slots collectively are referred to as preamble.**

(b) Certain time slots at the beginning of two burst are used to carry timing & synchronizing information. These time slots collectively are referred to as preamble.

(c) a&b

(d) None of above

77. Define guard time.

(a). It is necessary to between bursts to prevent the bursts from overlapping.

(b). the guard time will vary from burst to burst depending on the accuracy with which the various bursts can be positioned within each frame.

(c) a&b

(d) None of above

78. What is meant by decoding quenching?

(a). **It In certain phase detection systems the phase detector must be allowed time to recover from one burst before the next burst is received by it. This is known as decoding quenching.**

(b). In certain phase detection systems the phase detector must be allowed phase to recover from one burst before the next burst is received by it. This is known as decoding quenching.

(c) a&b

(d) None of above

79. What is meant by direct closed loop feedback?

(a). **The timing positions are reckoned from the last bit of the unique word in the preamble .The loop method is also known as direct closed loop feedback.**

(b). The timing positions are reckoned from the last bit of the unique word in the postamble. The loop method is also known as direct closed loop feedback.

(c) a&b

(d) None of above

80. What is meant by feedback closed loop control?

(a). **The synchronization information is transmitted back to an earth station from a distant, that is termed feedback closed loop control.**

(b). The synchronization information is transmitted forth to an earth station from a distant, that is termed feedback closed loop control.

(c) a&b

(d) None of above

81. Define frame efficiency.

a). **It is a measure of the fraction of frame time used for the transmission of Traffic**

(b). It is a measure of the fraction of information time used for the transmission of Traffic.

(c) a&b

(d) None of above

82. What is meant by telephone load activity factor?

a). **The fraction of time a transmission channel is active is known as the telephone load activity factor.**

(b). The fraction of time a transmission channel is paasive is known as the telephone load activity factor.

(c) a&b

(d) None of above

83. What is meant by digital speech interpolation?

a). **The point is that for a significant fraction of the time the channel is available for other transmissions,& advantages is taken of this in a form of demand assignment known as digital speech interpolation.**

(b). The point is that for a significant fraction of the time the channel is available for peer transmissions,& advantages is taken of this in a form of predefined assignment known as digital speech interpolation.

(c) a&b

(d) None of above

84. What are the type of digital speech interpolation?

a). **Digital time assignment speech interpolation**

(b). Analog time assignment speech interpolation

(c) a&b

(d) None of above

85. What are the type of digital speech interpolation?

a). **Speech predictive encoded communications**

(b). video predictive encoded communications

(c) a&b

(d) None of above

86. What is meant by freeze out?

a). **It has assumed that a free satellite channel will be found for any incoming speech spurt, but of course there is a finite probability that all channels will be occupied & the speech spurt lost. Losing a speech spurt in this manner is referred to as freeze out.**

(b). The point is that for a significant fraction of the time the channel is available for peer transmissions,& advantages is taken of this in a form of predefined assignment referred to as freeze out.

(c) a&b

(d) None of above

87. What is DSI?

a). **The DSI gain is the ratio of the number of terrestrial channels to number of satellite channels. It depends on the number of satellite channels provided as well the design objectives stated above.**

(b). The DSI gain is the ratio of the number of satellite channels to number of terrestrial channels. It depends on the number of satellite channels provided as well the design objectives stated above.

(c) a&b

(d) None of above

88. What are the advantage of SPEC method over DSI method?

a). The SPEC method over DSI method is that freez-out does not occur during overload conditions.

(b). The SPEC method over DSI method is that freez-out does occur during overload conditions.

(c) a&b

(d) None of above

89.What is ratio of bit rate IF bandwidth?

a). $R_b/B_H = m/(1+p)$

(b). $R_b/B_H = m^2/(1+p)$

(c) $R_b/B_H = m/(1+p)^2$

(d) None of above

90.What are the demerits of conventional approach method?

a). Excessive size&weight

(b). Power consumption.

(c) a&b

(d) None of above

91.Define space division multiplexing.

a). The satellites in Geostationary orbit can be achieved through the use of antenna spot beams. The use of spot beam is also known as space division multiplexing.

(b). The satellites in non-Geostationary orbit can be achieved through the use of antenna spot beams. The use of spot beam is also known as space division multiplexing.

(c) a&b

(d) None of above

92.Define satellite switched TDMA?

a). Space division multiplexing can be realized by switching the antenna interconnections in synchronism with the TDMA frame rate, this being known as satellite switched TDMA

(b). Space division multiplexing can be realized by switching the antenna interconnections in synchronism with the FDMA frame rate, this being known as satellite switched TDMA

(c) a&b

(d) None of above

93. What is SS/TDMA?

a). A modern pattern is a repetitive sequence of satellite switch modes, also referred to as SS/TDMA

(b). A modern pattern is a non-repetitive sequence of satellite switch modes, also referred to as SS/TDMA

(c) a&b

(d) None of above

94. What is processing gain?

a). The jamming or interference signal energy is reduced by a factor known as the processing gain.

(b). The jamming or interference signal energy is increased by a factor known as the processing gain.

(c) a&b

(d) None of above

95. What are the applications of Radarsat?

a). Shipping & fisheries

(b). Ocean feature mapping

(c) a&b

(d) None of above

96. What are the applications of Radarsat?

a). Oil pollution monitoring

(b). Iceberg detection

(c) Crop monitoring

(d) a, b & c

97. What is ECEF?

a). The geocentric equatorial coordinate system is used with the GPS system, where it is called the earth centered, earth fixed coordinate system.

(b). The geocentric equatorial coordinate system is used with the GPS system, where it is called the earth circular, earth first coordinate system.

(c) a&b

(d) None of these

98. What is dilution of precision?

a). Position calculations involve range differences,& where the ranges are nearly equal,any error is greatly magnified in the difference.This effect,brought about as known as a result of the satellite geometry is known as dilution of precision.

(b). Position calculations involve range differences,& where the ranges are nearly unequal, any error is greatly magnified in the difference. This effect, brought about as known as a result of the satellite geometry is known as dilution of precision.

(c) a & b

(d) None of these

100. What is PDOP?

a). With the GPS system, dilution of position is taken into account through a factor known as the position dilution of precision.

(b). With the GPS system, dilution of power is taken into account through a factor known as the power dilution of precision.

(c) a & b

(d) None of these

101. What is burst code word?

(a). It is a binary word , a copy of which is stored at each earth station.

(b). It is a digital word, a copy of which is stored at each earth station.

(c) a & b

(d) None of these

102. Defin SIC.

(a). The identifies the Transmitting station.

(b). The identifies the Receiving station.

(c) a & b

(d) None of these

103. What is a start of receiving frame?

(a). At any given traffic station, detection of the unique word in the reference burst signals the start of receiving frame.

(b). Detection of the letter in the reference burst signals the start of receiving frame.

(c) a & b

(d) None of these

104. What is meant by burst position acquisition & burst position synchronization?

(a). A station just entering ,or reentering after a long delay to acquire its correct slot position.

(b). A station just entering , or reentering after a long delay to acquire its un-correct slot position.

(c) a & b

(d) None of these

105. What is a single access?

(a). A transponder channel aboard a satellite may be fully loaded by a single transmission from earth station.

(b). A transponder channel aboard a satellite may be fully loaded by a double transmission from earth station.

(c) a & b

(d) None of these

106. What is an multiple access technique?

(a). A transponder to be loaded by a number of carriers. These may originate from a number of earth station may transmit one or more of the carriers. This mode of operation known as multiple access technique.

(b). A transponder to be loaded by a number of carriers.

(c) a & b

(d) None of these

107. What are types of multiple access technique?

- (a). FDMA
- (b). TDMA
- (c) a & b**
- (d) None of these

108. What is meant by frequency reuse?

- (a). The satellite as a whole to be accessed by earth stations widely separated geographically but transmitting on the same frequency i.e. , known as frequency reuse.**
- (b). The satellite as a whole to be accessed by earth stations widely separated geographically but transmitting on the different frequency i.e. , known as frequency reuse.
- (c) a & b
- (d) None of these

109. What is meant by space division multiple access?

- (a). The satellite as a whole to be accessed by earth stations widely separated geographically but transmitting on the same frequency i.e. ,known as frequency reuse. This method of access known as space division multiple access.**
- (b). The satellite as a whole to be accessed by earth stations widely separated geographically but transmitting on the different frequency i.e. , known as frequency reuse. This method of access known as space division multiple access.
- (c) a & b
- (d) None of these

110. Write the equations of C/N ratio.

- (a). $C/N_0 = (EIRP) + (G/T) - \text{LOSSES} - (K) \text{ dBHz}$.**
- (b). $C/N_0 = (EIRP) - \text{LOSSES} - (K) \text{ dBHz}$.
- (c) $C/N_0 = (EIRP) - \text{LOSSES} - (K) \text{ dB}$.
- (d) None of these

111. What is an error detecting code?

- (a). A code which allows for the detection of errors is termed an error detecting code.**
- (b). A code which allows for the correcting of errors is termed an error detecting code.

(c) a&b.

(d) None of these

112. Primary component of uplink section of satellite is

a) transformer

b) transistor

c) earth station transmitter

d) power station transmitter

113. Sound signals in TV are

a) amplitude modulated

b) dc modulated

c) frequency modulated

d) a and c

114. Video signals in TV are

a) Amplitude modulated

b) de-modulated

c) Frequency modulated

d) None of these

Q115. In a communication satellite if the beam width required for national coverage is 1° , then the beam width required for full global coverage may be around

a) 360°

b) 180°

c) 72°

d) 18°

Q116. With reference to satellite communication, the anti-jamming technique preferred is

- a) key leverage
- b) Frequency hopping**
- c) Once-only key
- d) Frequency-spectrum modulation

Q117. MODEM is

- a) A circuit which carries out modulation and demodulation of a carrier frequency**
- b) An automatic repeat request a device for correcting errors
- c) A system for transmitting high speed bursts
- d) Anti-jamming technique invariably installed on all communication satellites

Q118. DAMA stands for

- a) Data accessibility master aerial
- b) Digital attenuators microwave antenna
- c) Dual accessibility mode antenna
- d) Demand assigned multiple access**

Q119. PCM system is used in satellite communications for transmission of

- a) TV signal
- b) Telegraph signal
- c) Speech signal**
- d) All the above

Q120. An antenna can be made more directional by

- a) Increaseing its diameter
- b) Increaseing frequency of transmission
- c) Either of (a) or (b) above**
- d) None of the above

Q121. In satellite communication modulation is used

- a) AM
- b) FM**
- c) PWM
- d) PAM

Q122. FM is preferred for satellite communication because

- a) Satellite channel has large bandwidth and severe noise**
- b) It give high modulation index
- c) Low bandwidth is essentialiy requerment
- d) Non of the above

Q123. As on-line, real time data transmission system is most likely to require a connection that is

- a) Time shared
- b) Frequency shared
- c) Simplex
- d) Duplex**

Q124. ARQ stands for

- a) Accelerated redirection facility
- b) Amplitude ratiodetector quantizing noise
- c) Automatic repeat request**
- d) Aerial range quartz crystel

Q125. For globe communication, the minimum number of satellites needed is

- a) 1
- b) 3**
- c) 7
- d) 11

Q126. The frequency band used by most satellites is

- a) UHF
- b) VHF
- c) SHF**
- d) EHF

Q127. The total noise of a satellite earth station receiving system consists of

- a) Sky noise
- b) Antenna and feeder noise
- c) Parametric amplifier noise
- d) All of the above**

Q128. The optimum working frequency for satellite systems lies between

- a) 20 MHz and 100 MHz
- b) 2 GHz and 12 GHz**
- c) 20 GHz and 100 GHz
- d) 100 GHz and 200 GHz

Q129. Compander

- a) Give a poor ratio of signal to quantizing error, for weaker signals
- b) Give preferential treatment to stronger parts of the signal
- c) Compresses the higher amplitude parts of a signal before modulation and expand them back to normal again after demodulation**
- d) None of the above

Q130. In TV broadcast via satellite the TV signal from the main broadcast station is routed to the earth station via

- a) Low power transmitters
- b) Microwave links
- c) TV relay stations

d) Microwave repeater stations

Q 131. A telephone communication link between two countries is established through a composite system using submarine cable and satellite when

- a) Two countries are far apart
- b) Political links between two countries have been severed
- c) Two countries are not facing common satellite**
- d) Two countries are not different continents

Q132. A synchronous satellite orbits the earth once in

- a) 24 hours**
- b) 12 hours
- c) 6 hours
- d) 1 hour

Q133. The velocity of a geostationary satellite is nearly

- a) 1255 km/hr
- b) 6757 km/hr
- c) 9422 km/hr**
- d) 12644 km/hr

Q134. Geostationary satellites are located at a height of

- a) 3600 km from earth's surface
- b) 36000 km from earth's surface**
- c) 360,000 km from earth's surface
- d) 3600,000 km from earth's surface

Q135. Geostationary satellite follow

- a) Circular path
- b) Elliptical path**
- c) Inclined path

- d) Cycloidal path

Q136. Geostationary satellite are generally put in.....orbit and domestic satellite inorbit

- a) Polar, inclined orbit
- b) Polar, equatorial
- c) Equatorial, polar**
- d) Inclined , polar

Q137. Which area is least effectively covered by geostationary satellites?

- a) Equatorial region
- b) Polar region**
- c) A and C
- d) None of the above

Q 138. Satellite used for intercontinental communications are known as

- a) COMAT
- b) DOMSAT
- c) INTELSAT**
- d) EARSAT

Q139. A satellite earth station has

- a) Receiving facilities only
- b) Transmitting only
- c) A and C**
- d) A , c and attenuating

Q140. Satellite receives signal from

- a) Microwave repeater stations
- b) TV relay station
- c) Appropriate earth station**

- d) All of the above

Q141. The main advantage of satellite communication is

- a) Low cost
- b) Low distortion
- c) High reliability**
- d) High band width

Q 141. A communication satellite is a repeater between

- a) one transmitting and one receiving station
- b) one transmitting and many receiving station
- c) many transmitting and one receiving station
- d) many transmitting and many receiving station**

Q143. The angle subtended by earth at a geostationary communication satellite is nearly

- a) 66.5
- b) 47.34
- c) 17.34**
- d) 7.34

Q144. In analog technique of modulation in satellite, the most commonly employed system is

- a) AM
- b) FM**
- c) PAM
- d) PWM

Q145. Which is the most commonly employed modulation technique in the commercial communication satellite system?

- a) FM
- b) Digital modulation
- c) Analog modulation**

d) All of the above

Q146. Transmission bandwidth for satellite system least depends on

a) Modulation method

b) Overall costs

c) Available technology

d) Ionospheric characteristics

Q147. A certain sound has 1000 times more energy than another sound. The number of times it would sound stronger to a listener will be

a) 1000

b) 100

c) 30

d) 3

Q148. Shannon's law relates

a) Antenna gain to bandwidth

b) Frequency to antenna gain

c) Antenna gain to transmission losses

d) Information carrying capacity to S/N ratio

Q149. The orbital period of a satellite is proportional to (r-> radius)

a) r

b) $\sqrt{r}$

c) $r^{3/2}$

d) r^2

Q150. Primary source of power for satellite is

a) lead acid battery

b) nickel-cadmium battery

- c) solar cells
- d) regulated power supply

Q151. A 20 meter antenna give a certain up-link gain at 5 GHz. For getting the same gain at 25 GHz ate antenna size required will be

- a) 100 m
- b) 80 m
- c) 20 m
- d) 4 m

Q152. Which antenna is used for sending back signals from satellite to earth?

- a) Dipole antenna
- b) **Horn antenna**
- c) Yagi antenna
- d) Chicken-mash antenna

Q153. The signal to noise ratio for a satellite signal least depends on

- a) **Satellite surface area**
- b) Bandwidth
- c) Free space path losses
- d) Effective isotropically radiated power

Q154. In a communication satellite, the telephone channels are assembled in

- a) AM
- b) FM
- c) TDM
- d) **FDM**

155. One technique to enable a TV subscriber to interact is to provide an optional data channel from which a variety of information may be selected.

- a) true
- b) false
- c) equal
- d) none of these

156. A satellite transponder receives a ____ beam width to ____ the amount of energy received. In the downlink direction a ____ beam width is used to provide an adequately sized ____.

- a) narrow; maximize; wide; footprint
- b) narrow; minimize wide; footprint
- c) wide; maximize; wide; footprint
- d) none of these

157. An offset focus receiving antenna has the advantage that the LNB/C is so mounted as to not block any of the incoming radio waves.

- a) true
- b) false
- c) equal
- d) none of these

158. In satellite communication, a signal received by an antenna is fed directly into the receiving equipment via a suitable transmission medium.

- a) true
- b) false
- c) equal
- d) none of these

159. Geostationary satellites, once placed in their correct orbit, remain correctly positioned until the lifetime of their equipment expires.

- a) true
- b) false**
- c) equal
- d) none of these

160. Atmospheric drag has negligible effect on

- (a). geostationary satellites**
- (b). MEO
- (c). LEO
- (d) None of these

161. Atmospheric drag has effect on

- (a). geostationary satellites
- (b). MEO
- (c). LEO satellites below about 1000 km.**
- (d) None of these

162. An oblate spheroid is

- (a). The earth is not perfectly spherical, there being an equatorial bulge and a flattening at the poles, a shape described as an oblate spheroid**
- (b). The earth is perfectly spherical, there being an equatorial bulge and a flattening at the poles, a shape described as an oblate spheroid
- (c). LEO satellites.
- (d) None of these

163. The earth is not perfectly spherical?

- (a). The earth is not perfectly spherical, there being an equatorial bulge and a flattening at the poles**
- (b). The earth is perfectly spherical, there being an equatorial bulge and a flattening at the poles
- (c). LEO satellites.

(d) None of these

Q164. A satellite is orbiting in the equatorial plane with a period from perigee to perigee of 12 h. Given that the eccentricity is 0.002, calculate the semi-major axis. The earth's equatorial radius is 6378.1414 km.

(a) 26610Km (b) 2660Km

(c) 6610m (d) 266Km

165. The drag is greatest at the perigee?

(a) Because the drag is greatest at the perigee, the drag acts to reduce the velocity at this point, with the result that the satellite does not reach the same apogee height on successive revolutions.

(b) Because the drag is greatest at the perigee, the drag acts to increase the velocity at this point, with the result that the satellite does reach the same apogee height on successive revolutions.

(c). LEO satellites.

(d) None of these

Q166. A tropical year contains?

(a) 365.2422 days (b) 365days

(c) 366days (d) none of these

Q167. Determine which of the following years are leap years?

(a) 1987 (b) 1988

(c) 1986 (d) none of these

Q168. Cconditions are required for an orbit to be geostationary:

(a) The satellite must travel eastward at the same rotational speed as the earth.

(b). The orbit must be circular.

(c). The inclination of the orbit must be zero.

(d). all of these

Q169. A key parameter in link-budget calculations is

(a) the equivalent isotropic radiated power

- (b) FSL
- (c) AA
- (d) None of these

Q170. [EIRP] is

- (a) $[EIRP] = [PS] + [G]_{dBW}$
- (b). $[EIRP] = [PS] + [G]_{dB}$
- (c). The inclination of the orbit must be zero.
- (d). none of these

Q171. For a paraboloidal antenna, the isotropic power gain is given by

- (a) $G = \eta(10.472fD)^2$
- (b) $G = (10.472fD)^2$
- (c) $G = \eta(10.472fD)$
- (d) none of these

Q172. For a paraboloidal antenna, the isotropic power gain is given by (with the diameter D in feet)

- (a) $G = \eta(3.192fD)^2$
- (b) $G = (10.472fD)^2$
- (c) $G = \eta(10.472fD)$
- (d) none of these

Q173. [FSL]=?

- (a) $[FSL] = 32.4 + 20 \log r + 20 \log f$
- (b) $[FSL] = 20 \log r + 20 \log f$
- (c) $[FSL] = 32.4 + 20 \log r + 20 \log (\text{wavelength})$
- (d) none of these

Q174. [PR]=?

- (a) $[PR] = [EIRP] + [GR] - [FSL]$
- (b) $[PR] = [EIRP] + [GR]$

(c) $[PR] = [EIRP] + [FSL]$

(d) none of these

Q175. The losses for clear-sky conditions are

(a) $[LOSSES] = [FSL] + [RFL] + [AML] + [AA] + [PL]$

(b) $[LOSSES] = [FSL] + [AA] + [PL]$

(c) $[LOSSES] = [FSL] + [RFL] + [AML]$

(d) none of these

Q176. The Link-Power Budget Equation?

(a) $[PR] = [EIRP] + [GR] - [LOSSES]$

(b) $[LOSSES] = [FSL] + [AA] + [PL]$

(c) $[LOSSES] = [FSL] + [RFL] + [AML]$

(d) none of these

Q177. A satellite link operating at 14 GHz has receiver feeder losses of 1.5 dB and a free-space loss of 207 dB. The atmospheric absorption loss is 0.5 dB, and the antenna pointing loss is 0.5 dB. Depolarization losses may be neglected. Calculate the total link loss for clear-sky conditions.

(a) 209.5dB

(b) 29.5dB

(c) 209.5

(d) none of these

Q177. The main characteristic of thermal noise is that

(a) It has a flat frequency spectrum.

(b) It has a slot frequency spectrum

(c) It has a thick frequency spectrum

(d) none of these

Q178. The direct equivalence between noise factor and noise temperature:

(a) $T_e = (F - 1) T_0$

(b) $T_e = (F - 10) T_0$

(c) $T_e = (F + 1) T_0$

(d) none of these

Q179. An LNA is connected to a receiver which has a noise figure of 12 dB. The gain of the LNA is 40 dB, and its noise temperature is 120 K. Calculate the overall noise temperature referred to the LNA input.

a) 120.43K

(b) 12.43K

(c) 20.43K

(d) none of these

Q180. The uplink?

(a) The uplink of a satellite circuit is the one in which the earth station is transmitting the signal and the satellite is receiving it.

(b) The uplink of a satellite circuit is the one in which the earth station is receiving the signal and the satellite is transmitting it.

(c) signal transmission

(d) none of these

Q181. $\left[\frac{C}{N} \right] =$

(a) $\left[\frac{C}{N} \right] = [EIRP] + [G_R] - [LOSSES] - [k] - [T_s] - [B_N]$

(b) $\left[\frac{C}{N} \right] = [EIRP] + [G_R] - [LOSSES] - [T_s] - [B_N]$

(c) $\left[\frac{C}{N} \right] = [EIRP] + [G_R] - [LOSSES] - [k] - [T_s]$

(d) none of these

Q182. The uplink?

(a) The uplink of a satellite circuit is the one in which the earth station is transmitting the signal and the satellite is receiving it.

Q183. For a satellite circuit the individual link carrier-to-noise spectral density ratios are: uplink 100 dBHz; downlink 87 dBHz. Calculate the combined (C/N_0) ratio.

- (a) 86.79 dBHz**
- (b) 86.79 dB
- (c) 6.79 dBHz
- (d) none of these

Q184. Intermodulation noise.:

- (a) Intermodulation occurs where multiple carriers pass through any device with nonlinear characteristics.
- (b) Where a large number of modulated carriers are present, the inter-modulation products are not distinguishable separately but instead appear as a type of noise which is termed intermodulation noise.**
- (c) Intermodulation occurs where single carriers pass through any device with nonlinear characteristics.
- (d) none of these

Q185. For a satellite circuit the carrier-to-noise ratios are uplink 23 dB, downlink 20 dB, intermodulation 24 dB. Calculate the overall carrier- to-noise ratio in decibels.

- (a) 17.2dBHz**
- (b) 86.79 dB
- (c) 6.79 dBHz
- (d) none of these

Q186. In order to reduce intermodulation noise:

- (a) In order to reduce intermodulation noise, the TWT must be operated in a BO condition.**
- (b) In order to increase intermodulation noise, the TWT must be operated in a BO condition
- (c) In order to reduce intermodulation noise, the TWT must be operated in a saturation condition
- (d) In order to reduce intermodulation noise, the TWT must be operated in a BO condition

Q187. The space segment will obviously include the satellites, but it also includes the ground facilities needed to keep the satellites operational, these being referred to:

- (a) As the tracking, telemetry, and command (TT&C) facilities.**
- (b) The earth station is receiving the signal and the satellite is transmitting it.

(c) signal transmission

(d) none of these

Q188. The transponder forms one of the main sections of the payload, the other being:

(a) The antenna subsystems.

(b) The earth station is receiving the signal and the satellite is transmitting it.

(c) signal transmission

(d) none of these

Q189. In the C band and, more especially, the Ku band, rainfall is the most significant cause of:

(a) Signal fading.

(b) Signal spreading

(c) Attenuation

(d) none of these.

Q190. The period of a satellite, the time required for a satellite to make a complete trip around the Earth, is determined by _____ law.

A) Kepler's

B) Newton's

C) Ohm's

D) none of the above

Q191. The signal from a satellite is normally aimed at a specific area called the _____.

A) path

B) effect

C) footprint

D) none of the above

Q192. There is (are) _____ orbit(s) for a GEO satellite.

A) one

B) two

- C) many
- D) none of the above

Q193. MEO satellites are located at altitudes between km.

- A) 3000 and 5000
- B) 5000 and 10,000
- C) 5000 and 15,000**
- D) none of the above

Q194. LEO satellites are normally below an altitude of _____ km.

- A) 1000
- B) 2000**
- C) 3000
- D) none of the above

Q195. _____ is based on a principle called trilateration.

- A) GPS**
- B) Teledesic
- C) Iridium
- D) none of the above

Q196. Low-Earth-orbit (LEO) satellites have _____ orbits.

- A) equatorial
- B) polar**
- C) inclined
- D) none of the above

Q197. A GEO is at the _____ orbit and revolves in phase with Earth.

- A) equatorial**
- B) polar

- C) inclined
- D) none of the above

Q198. GPS satellites are _____ satellites.

- A) GEO
- B) MEO**
- C) LEO
- D) none of the above

Q199. _____ satellites provide time and location information for vehicles and ships.

- A) GPS**
- B) Iridium
- C) Teledesic
- D) none of the above

Q200. Iridium satellites are _____ satellites.

- A) GEO
- B) MEO
- C) LEO**
- D) none of the above

Q201. _____ Satellites can provide direct universal voice and data communications for handheld terminals.

- A) GPS
- B) Iridium**
- C) Teledesic
- D) none of the above

Q202. Teledesic satellites are _____ satellites.

- A) GEO
- B) MEO

C) LEO

D) none of the above

Q203. _____ satellites will provide universal broadband Internet access.

A) GPS

B) Iridium

C) Teledesic

D) none of the above

Q204. The payload refers to:

A) The payload refers to the equipment used to provide the service for which the satellite has been launched.

B) Satellites can provide direct universal voice and data communications for handheld terminals.

C) data communications

D) none of the above

Q205. The bus refers to:

A) The payload refers to the equipment used to provide the service for which the satellite has been launched.

B) The bus refers not only to the vehicle which carries the payload but also to the various subsystems which provide the power, attitude control, orbital control, thermal control, and command and telemetry functions required to service the payload.

C) data communications

D) none of the above

Q206. The primary electrical power for operating the electronic equipment in satellite is obtained from:

A) The payload refers to the equipment used to provide the service for which the satellite has been launched.

B) The bus refers not only to the vehicle which carries the payload.

C) solar cells

D) none of the above

Q207. At the beginning of life, the panels produce _____ dc power, which may drop to _____ at the end of 10 years.

(a) 940 W, 760 W

(b) 900 W, 760 W

(c) 940 W, 70 W

(d) None of these

Q207. During eclipse, power is provided by two nickel-cadmium (Ni-Cd) long-life batteries, which will deliver _____.

(a) 800 W

(b) 830 W

(c) 880 W

(d) None of these

Q208. At the end of life, battery recharge time is less than _____.

(a) 200h

(b) 700h

(c) 16h

(d) None of these

Q209. The HS 601 can be designed to provide dc power from _____.

(a) 2 to 4 kW

(b) 1 to 1.4 kW

(c) 2 to 6 kW

(d) None of these

Q210. Attitude control is necessary, for example _____.

(a) To ensure that directional antennas point in the proper directions.

(b) Proper gain

(c) Proper moment

(d) None of these

Q211. Infrared sensors, referred to as horizon detectors, are used _____.

(a) To ensure that directional antennas point in the proper directions.

(b) To detect the rim of the earth against the background of space.

(c) Proper moment

(d) None of these

Q212. Passive attitude control _____.

(a) To ensure that directional antennas point in the proper directions.

(b) Passive attitude control refers to the use of mechanisms which stabilize the satellite without putting a drain on the satellite's energy supplies.

(c) Proper moment

(d) None of these

Q213. Active attitude control _____.

(a) To ensure that directional antennas point in the proper directions.

(b) With active attitude control, there is no overall stabilizing torque present to resist the disturbance torques.

(c) Proper moment

(d) None of these

Q214. The INTELSAT VI satellite used _____.

(a) The INTELSAT VI satellite used heaters to maintain propulsion thrusters and line temperatures.

(b) With active attitude control, there is no overall stabilizing torque present to resist the disturbance torques.

(c) Proper moment

(d) None of these

Q215. The earth segment of a satellite communications system consists of _____.

(a) The earth segment of a satellite communications system consists of the transmit and receive earth stations.

(b) With active attitude control, there is no overall stabilizing torque present to resist the disturbance torques.

(c) Proper moment

(d) None of these

Q216. Direct broadcast satellite (DBS) service _____.

(a) Planned broadcasting directly to home TV receivers

(b) With active attitude control, there is no overall stabilizing torque present to resist the disturbance torques.

(c) Proper moment

(d) None of these

Q217. Planned broadcasting directly to home TV receivers takes place in _____.

(a) Planned broadcasting directly to home TV receivers

(b) With active attitude control, there is no overall stabilizing torque present to resist the disturbance torques.

(c) The Ku (12-GHz) band

(d) None of these

Q218. In the Americas, for example, the down-link band is _____.

(a) 12.2 to 12.7 GHz

(b) With active attitude control, there is no overall stabilizing torque present to resist the disturbance torques.

(c) The Ku (12-GHz) band

(d) None of these

Q219. In The comparatively large satellite receiving dishes [ranging in diameter from about 1.83 m (6 ft) to about 3-m (10 ft) in some locations], which may be seen in some “_____” are used to receive downlink TV signals.

(a) Backyards

(b) With active attitude control, there is no overall stabilizing torque present to resist the disturbance torques.

(c) The Ku (12-GHz) band

(d) None of these

Q220. In The comparatively large satellite receiving dishes [ranging in diameter from about 1.83 m (6 ft) to about 3-m (10 ft) in some locations], which may be seen in some “_____” are used to receive downlink TV signals at _____.

(a) Backyards, C-band

(b) With active attitude control, there is no overall stabilizing torque present to resist the disturbance torques.

(c) **Backyards**, The Ku (12-GHz) band

(d) None of these

Q221. One of the advantages claimed by sellers of _____ equipment for home reception is that there is no loss of quality compared with the compressed digital signals.

(a) C-band

(b) Ka band

(c) Ku (12-GHz) band

(d) None of these

Q222. The most widely advertised receiving system for C-band system appears to be 4DTV manufactured by Motorola. This enables reception of:

(a) Free, analog signals and “wild feeds”

(b) With active attitude control, there is no overall stabilizing torque present to resist the disturbance torques.

(c) Free DigiCipher 2 services

(d) a and c.

Q223. The most widely advertised receiving system for C-band system appears to be 4DTV manufactured by Motorola. This enables reception of:

(a) Subscription DigiCipher 2 services

(b) Video-Cipher II plus subscription services

(c) Free DigiCipher 2 services

(d) all of these

Q224. VideoCipher is the brand name for the equipment used to _____.

(a) scramble analog TV signals

(b) With active attitude control, there is no overall stabilizing torque present to resist the disturbance torques.

(c) The Ku (12-GHz) band

(d) None of these

Q225. The major difference between the Ku-band and the C-band receive-only systems lie in the frequency of operation of _____.

(a) 12.2 to 12.7 GHz

(b) The indoor unit

(c) The outdoor unit

(d) None of these

Q226. The major difference between the Ku-band and the C-band that satellites intended for DBS have much _____.

(a) higher equivalent isotropic radiated power(EIRP)

(b) The indoor unit

(c) The home unit

(d) None of these

Q227. The signal fed to the indoor unit is normally a wideband signal covering the range _____.

(a) 12.2 to 12.7 GHz

(b) 950 to 1450 MHz.

(c) 12-GHz

(d) None of these

Q228. A major difference between DBS TV and conventional TV is that with DBS, _____ is used, whereas with conventional TV, _____ in the form of vestigial single side-band (VSSB) is used.

(a) Frequency modulation, amplitude modulation

(b) Frequency modulation, digital modulation

(c) Phase modulation, amplitude modulation

(d) None of these

Q229. A major difference between DBS TV and conventional TV is that with DBS, FM is used, whereas with conventional TV, AM in the form of _____ is used.

(a) Vestigial single side-band (VSSB)

(b) Frequency modulation

(c) Phase modulation

(d) None of these

Q230. MATV stand as _____.

(a) Master antenna TV (MATV)

(b) Maximum Angular TV

(c) Multi amplitude TV

(d) None of these

Q231. A master antenna TV(MATV) system is used to provide reception of DBS TV/FM channels to a small group of users, for example _____.

(a) To the tenants in an apartment building

(b) With attitude control, there is no overall stabilizing torque present to resist the disturbance torques.

(c) The Ku (12-GHz) band

(d) None of these

Q232. A master antenna TV(MATV) system is used to provide reception of _____ to a small group of users, for example to the tenants in an apartment building.

(a) DBS TV/FM channels

(b) FM channels

(c) The Ku (12-GHz) band

(d) None of these

Q233. CATV stands as _____.

(a) Community antenna TV (MATV)

(b) Carrier Angular TV

(c) Cost amplitude TV

(d) None of these

Q234. The CATV system employs a single _____, with separate feeds available for each sense of polarization.

(a) Outdoor unit

(b) Indoor unit

(c) TV unit

(d) None of these

Q235. In remote areas where a cable distribution system may not be installed, the signal can be rebroadcast from_____.

(a) EHF TV transmitter

(b) A low-power VHF TV transmitter

(c) TV transmitter

(d) None of these

Q236. With the CATV system, local programming material also may be distributed to subscribers, an option which is _____ in the MATV system.

(a) Not permitted

(b) Permitted

(c) Transmitted

(d) None of these

Q237. In a 6/4-GHz heavy-route system, each satellite channel (bandwidth 36 MHz) is capable of carrying _____ simultaneously or a single-color analog TV signal with associated audio.

(a) Under 960 one way voice circuits

(b) Over 960 one-way voice circuits

(c) Over 960 two way voice circuits

(d) None of these

Q238. DBS services stands as _____.

(a) Direct broadcast satellite

(b) Distance broadcast satellite

(c) Distributed broadcast satellite

(d) None of these

Q239. Broadcast services include _____.

(a) Audio services

(b) Television services

(c) Internet services

(d) All of these

Q240. Direct broadcast television _____.

(a) Digital TV

(b) Double TV

(c) Analog TV

(d) None of these

Q241. The orbital spacing is _____ for the high-power satellites, so adjacent satellite interference is considered nonexistent.

(a) 18°

(b) 9°

(c) 27°

(d) None of these

Q242. A satellite may carry _____ transponders.

(a) 32

(b) 41

(c) 24

(d) None of these

Q243. If all 32 transponders are in use, each will operate at the lower power rating of _____.

(a) 12 W

(b) 120 W

(c) 1200 W

(d) None of these

Q244. By doubling up the high-power amplifiers, the number of transponders is _____.

(a) Increased by half to 48

(b) Reduced by half to 16

(c) same

(d) None of these

Q245. By doubling up the high-power amplifiers, the number of transponders is reduced by half to 16, but each transponder operates at _____.

(a) The higher power rating of 120 W

(b) The higher power rating of 240 W

(c) Same

(d) None of these

Q246. The frequencies for direct broadcast satellites vary from region to region throughout the world, although these are generally in the _____.

(a) Ku band

(b) Ka band

(c) C-band

(d) None of these

Q247. The primary use of which is for DBS, the uplink frequency range is _____, and the downlink range is 12.2 to 12.7 GHz.

(a) 17.3 to 17.8 GHz

(b) 17.3 to 19.8 GHz

(c) 15.3 to 17.8 GHz

(d) None of these

Q248. The primary use of these satellites, however, is for point-to-point applications, with an allowed additional use in the _____.

(a) DBS service

(b) Communication service

(c) Satellite

(d) None of these

Q249. The total of 32 transponders requires the use of both right-hand circular polarization (RHCP) and left-hand circular polarization (LHCP) in order to permit _____, and guard bands are inserted between channels of a given polarization.

(a) Frequency reuse

(b) Channel

(c) Transmit information

(d) None of these

Q250. The 24-MHz bandwidth of a transponder is capable of carrying _____.

(a) One analog television channel

(b) Two analog television channel

(c) Four analog television channel

(d) None of these

Q251. DTH stands as _____.

(a) Direct-to-home (DTH)

(b) Distance-to-home (DTH)

(c) Double-to-home (DTH)

(d) None of these

Q252. The bit rate for digital television depends very much on the _____.

- (a) **Picture format**
- (b) Information format
- (c) Voice format
- (d) None of these

Q253. Using the HDTV format having a pixel count per frame of _____ and a refresh rate of 30 frames per second

- (a) $192 * 108$
- (b) **$1920 * 1080$**
- (c) $920 * 1000$
- (d) None of these

Q254. In the broadcast raster for studio-quality television, when digitized according to the international CCIR-601 television standard, requires a bit rate of _____.

- (a) **216 Mb/s**
- (b) 26 Mb/s
- (c) 2006 Mb/s
- (d) None of these

Q255. Single DBS transponder has to carry somewhere between _____ TV programs to be commercially viable.

- (a) **Four and eight**
- (b) Two and eight
- (c) Six and eight
- (d) None of these

Q256. MPEG stands as _____.

- (a) **Moving Pictures Expert Group**
- (b) Most Pictures Expert Group
- (c) Moving Pictures Enhance Group

(d) None of these

Q257. In DBS systems.

- (a) MPEG-2 is used for video compression**
- (b) MPEG-2 is used for video enhancing
- (c) MPEG-2 is used for audio compression
- (d) None of these

Q258. As a first or preprocessing step, the analog outputs from the red (R), green (G), and blue (B) color cameras are converted to_____.

- (a) A luminance component (Y) and two chrominance components (Cr) and (Cb)**
- (b) Two luminance component (Y) and (Cb) and one chrominance components (Cr)
- (c) Two luminance component (Y), (Cb) and (Cr)
- (d) None of these

Q259. MPEG-2 uses:

- (a) 4:2:0 sampling**
- (b)) 2:0:0 sampling
- (c)) 3:2:0 sampling
- (d) None of these

Q260. 4:4:4 sampling means that_____.

- (a) The sampling rates of Y, Cb, and Cr are equal**
- (b) The sampling rates of Y, Cb, and Cr are unequal
- (c) a&b
- (d) None of these

Q261. 4:2:2 sampling means that_____.

- (a) The Cb and Cr signals are sampled at half the rate of the Y signal component.**
- (b) The Cb and Cr signals are sampled at double the rate of the Y signal component.
- (c) a&b
- (d) None of these

Q262. 4:2:0 sampling means that _____.

- (a) Cb and Cr are sampled at half the Y sampling rate, but they are sampled only on alternate scan lines.**
- (b) Cb and Cr are sampled at double the Y sampling rate, but they are sampled only on alternate scan lines.
- (c) Cb and Cr are sampled at full the Y sampling rate, but they are sampled only on alternate scan lines.
- (d) None of these

Q263. A macro-block consists of _____.

- (a) 16 * 16 pixels**
- (b) 8 * 8 pixels
- (c) 2 * 2 pixels
- (d) None of these

Q264. In DBS system.

- (a) MPEG-1 is used for video compression
- (b) MPEG-1 is used for audio compression**
- (c) MPEG-1 is used for picture compression
- (d) None of these

Q265. MPEG-4 is _____.

- (a) MPEG-4 provides many features not present with other compression schemes, such as interactivity for viewers, where objects within a scene can be manipulated.
- (b) MPEG-4 provides the major advantage is the reduction in bit rate offered in satellite television.
- (c) a&b**
- (d) None of these

Q266. MPEG-4 provides the major advantage is the _____ in bit rate offered in satellite television.

- (a) Reduction**
- (b) Increment
- (c) double
- (d) None of these

Q267. ODU stands as_____.

(a) The Home Receiver Outdoor Unit

(b) The Home Receiver outside Unit

(c) The Home Receiver opposite Unit

(d) None of these

Q268. IDU stands as_____.

(a) The Home Receiver input Unit

(b) The Home Receiver Indoor Unit

(c) The Home Receiver induce Unit

(d) None of these

Q269. Because of the highly compressed nature of the DBS signal, there is little _____in the information being transmitted, and bit errors affect the signal much more severely than they would in a noncom-pressed bit stream.

(a) Redundancy

(b) Disturbance

(c) Noise

(d) None of these

Q270. In Because of the highly compressed nature of the DBS signal, there is little redundancy in the information being transmitted, and bit errors affect the signal much _____severely than they would in a non-compressed bit stream.

(a) More

(b) Less

(c) Same

(d) None of these

Q271. The use of turbo codes, and LDPC codes currently being introduced for high definition TV will provide a much greater _____ in transponder capacity.

- (a) Increase**
- (b) Decrease
- (c) Same
- (d) None of these

Q272. The IDU must be able to receive any of the 32 transponders, although only _____ of these will be available for a single polarization.

- (a) 16**
- (b) 8
- (c) 24
- (d) None of these

Q273. The main factor governing performance of a DBS system will be the $[E_b/N_0]$ of the _____.

- (a) Uplink
- (b) Downlink**
- (c) Up-downlink
- (d) None of these

Q274. HDTV stands as _____.

- (a) High Definition Television**
- (b) Half Definition Television
- (c) Huge Definition Television
- (d) None of these

Q275. DirecTV plans to use _____ in its HDTV satellite broadcasts and all HDTV services in Europe are expected to use this rather than the MPEG-2.

- (a) H.264/AVC**
- (b) H.24/AVC

(c) H.64/AVC

(d) None of these

Q276. CRT stands as_____.

(a) Combine ray tube

(b) Cathode ray tube

(c) Cathode rise tube

(d) None of these

Q277. The familiar direct view cathode ray tube (CRT) used for analog TV is _____of displaying HDTV.

(a) Not capable

(b) Capable

(c) Accept

(d) None of these

Q278. Types of display:

(a) Plasma displays

(b) Liquid crystal displays (LCD)

(c) Digital light processing (DLP) displays

(d) all of these

Q279. Plasma displays are made up of tiny_____. The video signal stimulates a gas inside the cells, which impacts the phosphors causing them to glow.

(a) Cells coated with red, green, and black phosphors

(b) Cells coated with red, green, and blue phosphors

(c) Cells coated with white, green, and blue phosphors

(d) None of these

Q280. DLP displays utilize a digital micro-mirror device (DMD) invented by_____.

(a) Texas Instruments

(b) IBM

(c) STMicroelectronics

(d) None of these

Q281. The DMD contains approximately_____, each micro-mirror representing one pixel. The micro-mirrors can be mechanically pivoted up to 5000 times a second, the pivoting being activated by the video signal.

(a) 5.1 million micro-mirrors

(b) 10.3 million micro-mirrors

(c) 1.3 million micro-mirrors

(d) None of these

Q282. For NTSC analog TV, (see Sec. 9.5) $L_{act}=483$, $L=525$, $a=4/3$, $F_{lb}=1.19$ and $F=30$. With $K=0.7$. Calculate the highest video frequency.

(a) 2.2 MHz

(b) 4.2 MHz

(c) 3.2 MHz

(d) None of these

Q283. Calculate the highest video frequency for HDTV 1080i. Assume a Kell factor of 0.7.

(a) 2.6 MHz

(b) 206 MHz

(c) 26 MHz

(d) None of these

Q284. VSAT stands as_____.

(a) Very small aperture terminal system

(b) Vast small aperture terminal system

(c) Virtual small aperture terminal system

(d) None of these

Q285. The basic structure of a VSAT network consists of a hub station which provides a broadcast facility to all the VSATs in the network and the VSATs themselves which access the satellite in some form of_____.

(a) Multiple-access mode

(b) Multiplexing

(c) Channel

(d) None of these

Q286. _____ is the normal downlink mode of transmission from hub to the VSATs, and the transmission can be broadcast for reception by all the VSATs in a network, or address coding can be used to direct messages to selected VSATs.

(a) Space division multiplex

(b) Frequency division multiplex

(c) Time division multiplex

(d) None of these

Q287. The most popular access method is _____, which allows the use of comparatively low-power VSAT terminals

(a) FDMA

(b) TDMA

(c) CDMA

(d) None of these

Q288. DAMA can be used with _____.

.

(a) FDMA

(b) TDMA

(c) FDMA as well as TDMA

(d) None of these

Q289. DAMA can be used with FDMA as well as TDMA, but the disadvantage of the method is that a _____ through which the VSATs can make requests for channel allocation.

(a) Reserve channel must be instituted

(b) Un-reserve channel must be instituted

(c) Channel allocation

(d) None of these

Q290. Most VSAT systems operate in the _____, although there are some C-band systems in existence.

(a) Ka band

(b) Ku band

(c) L- band

(d) None of these

Q291. Radarsat is _____, which is part of the Canadian space program.

(a) An earth-resources remote-sensing satellite

(b) An satellite-resources remote-sensing s

(c) An radar satellite

(d) None of these

Q292. In the GPS system, a constellation of 24 satellites circles the earth in near-circular_____.

(a) GEO

(b) MEO

(c) Inclined orbits

(d) None of these

Q293. The GPS system uses _____, from satellites to users, so that the user does not require a transmitter, only a GPS receiver.

(a) One-way transmissions

(b) Two-way transmissions

(c) Half-way transmissions

(d) None of these

Q294. The GPS system uses one-way transmissions, from satellites to users, so that the user_____.

(a) Does not require a transmitter

- (b) Does require a transmitter
- (c) Require only a GPS receiver

(d) a & c

Q295. The Orbital Communications Corporation (Orbcomm) system is a _____, which provides two-way message and data communications services and position determination.

- (a) MEO satellite system
- (b) GEO satellite system

(c) LEO satellite system

- (d) None of these

Q296. The Orbital Communications Corporation (Orbcomm) system is a LEO satellite system, which provides _____ message and data communications services and position determination.

(a) Two-way

- (b) One-way
- (c) Half-way
- (d) None of these

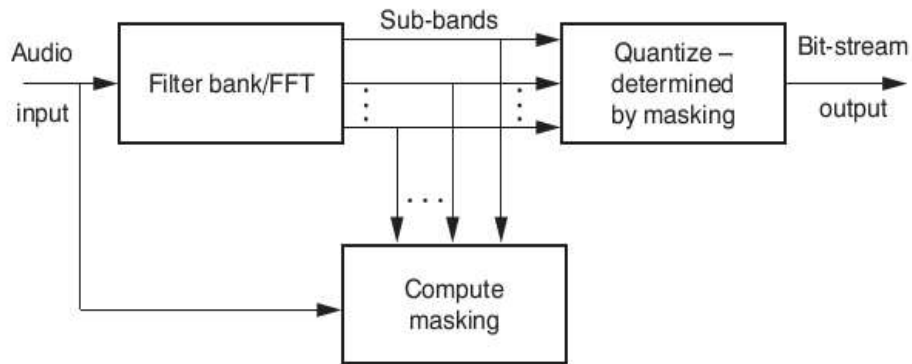
Q297. The Asian Cellular System, or AceS, utilizes one _____ covering the Asia Pacific area, an area of over 11 million square miles.

- (a) Garuda MEO satellite

(b) Garuda geosynchronous satellite

- (c) Garuda LEO satellite
- (d) None of these

Q298. Identifies the diagram:



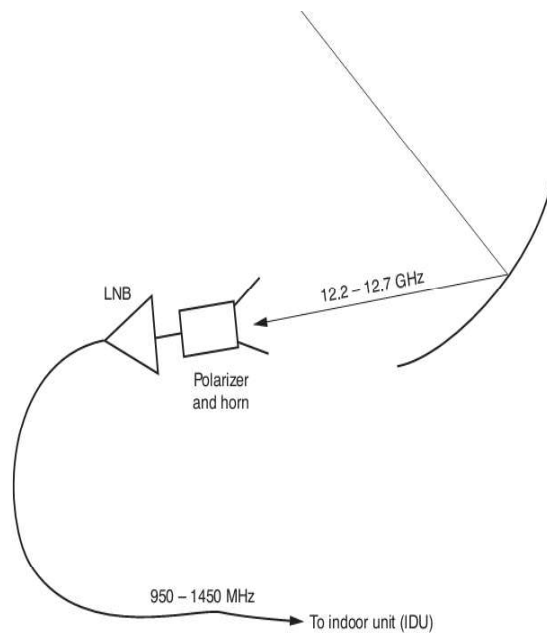
(a) MPEG-1

(b) MPEG-2

(c) MPEG-4

(d) None of these

Q299. Identifies the diagram:



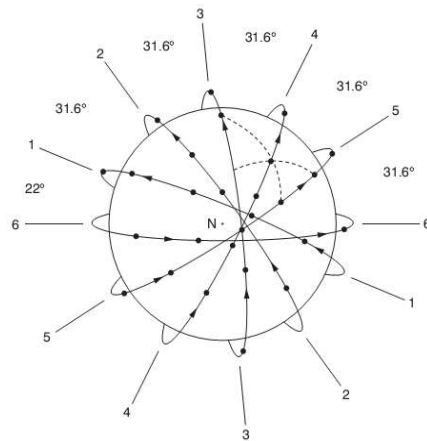
(a) Block schematic for the Indoor unit (IDU)

(b) Block schematic for the outdoor unit (ODU)

(c) Block schematic for the In-outdoor unit (ODU)

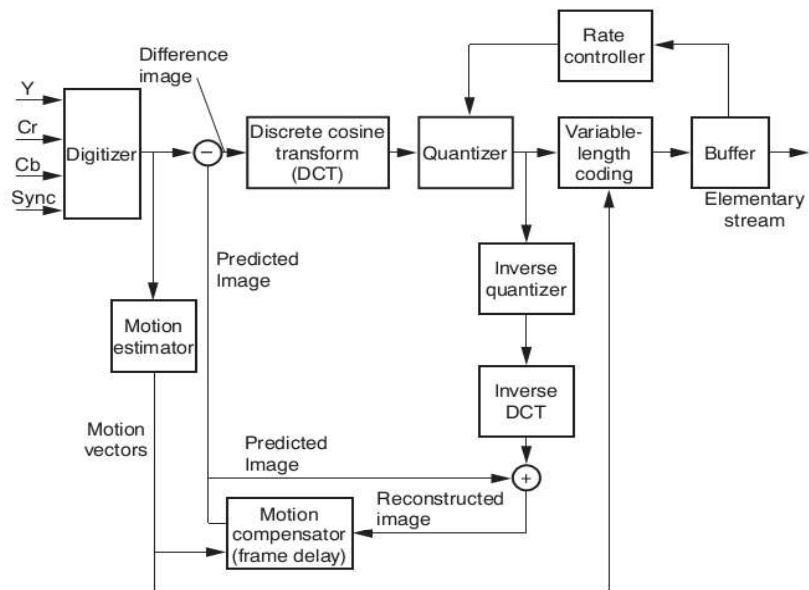
(d) None of these

Q300. Identifies the diagram:



- (a) A polar view of the Iridium satellite orbits
- (b) A polar view of the Orbsat satellite orbits**
- (c) A polar view of the radarsat satellite orbits
- (d) None of these

Q301. Identifies the diagram:



- (a) MPEG-1 encoder paths.
- (b) MPEG-2 encoder paths.**
- (c) MPEG-4 encoder paths.
- (d) None of these

Q102. The uplink Frequency of C-band?

- (a) 4GHz
- (b) 6GHz
- (c) 8GHz
- (d) none of these