UNIT-I-SATELLITE ORBITS

1.Is the earth's rotational period:

a) **23hrs 56mins 4 sec**
b) 24hrs 00mins 00secs
c) 24hrs 3min 56 secs

2. If a satellite is placed in an orbit with altitude less than 200km does in

a) **Fall back to earth**
b) Fly off into outer space
c) Have a circular orbit

3. the apogee of an orbit is the point when the satellite is

a) Closest to the earth
b) Furthest from the earth
c) Closest to the sun
d) Furthest from the sun

4. the perigee of an orbit is the point when the satellite is

a) Closest to the earth
b) Furthest from the earth
c) Closest to the sun
d) Furthest from the sun

5. A satellite is in a circular orbit with an altitude of 200km. If the earth's radius is 6370 km, What is the period of the orbits?

a) 87mins
b) 88mins
c) 127mins
d) 150 mins

6.A satellite is in an elliptical orbit with an apogee altitude of 3000km and a perigee altitude of 1000km. For the earth radius value of 6370km, is the orbital period:

a) 88mins
b) 105mins
c) 127mins
d) 150mins

7.Is the plane of the geostationary orbit:

a) In the equatorial's plane
b) Through the N and S poles
c) In the earth's orbital plan around the earth

8. Is the altitude of geostationary satellite with 24 hours period:

a) 31672km
b) 35370km
c) 35872km
d) 42242km

9.the exact period of truly geostationary satellite is one sidereal day, 23hrs 56mins and 4 secs. What is the altitude of the satellite with this period?

a) 35370km
b) 35795km
c) 42165km

d) 35990km

10.If a geostationary satellite moves away from the earth to an altitude of 42442km. to an observer at an equator, will the satellite appear to:

a) Drifts to towards the east
b) Drifts to towards the west
c) Remaining stationary in the sky

11.Which of the following are needed to find the look angels for a geostationary satellite?

a) Earth station latitude
b) Earth station longitude
c) Subsatellite longitude
d) All the above

12.An Azimuth angle is given as 270 ˚. What compass direction is this?

a) North
b) South
c) East
d) West

13. An earth station is located in equator, which is in the southern hemisphere at a longitude of 80 ˚ west. In which part of the sky would you look for a geostationary satellite with a subsatellite longitude of 115 ˚ west?

a) North-east
b) South-east
c) North-west
d) South-west

14.If the angle gamma is 31.2 ˚, would you expect the satellite to be

a) Below the horizon
b) On the horizon
c) Just above the horizon
d) 2degree above the horizon

15. An earth station has a longitude of 47 ˚ east of the prime meridian and a latitude of 0 ˚. A geostationary satellite has a subsatellite point of 47 ˚ east. What are the look angles?

a) Az 180 ˚, El 90 ˚
b) Az 180 ˚, El 0 ˚
c) Az 0 ˚, El 90 ˚
d) Az 0 ˚, El 0 ˚

16. A rocket which is not recovered is called is

a) STS
b) ELV
c) XTV
d) PAM

17.the space shuttle launches the satellite in to geostationary orbit is

a) LEO
b) ELV
c) XRC
d) PAM

18.The linear velocity of the satellite in circular low earth orbit at an altitude of 400 km is

a) 7673msec
b) 7812msec
c) 7950msec
d) 8029msec

19.What fraction of ELV launch weight geostationary orbit in typical launch?

a) 0.5%
b) 1.0%
c) 2.0%
d) 5%

20.Which is largest perturbing effect on a satellite orbit:

a) The sun
b) The moon
c) The planets

21.What is the longest duration of full eclipse for a geostationary satellite:

a) 67 minutes
b) 71 minutes
c) 75minutes
d) 78 minutes

22.Is a sun transit when the sun:

a) Pass behind the satellite
b) Pass though the zenith
c) Pass from east to west across the sky

23.When a satellite is travelling away from an earth station, does the doppler effect cause the frequency to

a) Increase
b) Decrease
c) Stay the same

24.The direction of orbit in the same direction of earth rotation is called _____

a) Retrograde
b) Prograde
c) Perigee
d) Apogee

25. When is the speed of the satellite maximum in an elliptical orbit?

a) Retrograde
b) Porograde
c) Perigee
d) Apogee

26.The time period taken by the satellite to complete one orbit is called _____

a) Lapsed time
b) Time period
c) Sidereal period
d) Unit frequency

27.The period of time that elapses between the successive passes of the satellite over a given meridian of earth longitude is called as _____

a) synodic period
b) Lapsed time
c) Time period
d) Sidereal period

28. What is the angle of inclination for a satellite following an equatorial orbit?

a) 0°
b) 180°
c) 45°
d) 90°

29. The angle between the line from the earth station's antenna to the satellite and the line between the earth station's antenna and the earth's horizon is called as _____

a) Angle of inclination
b) Angle of elevation
c) Apogee angle
d) LOS angle

30.To use a satellite for communication relay or repeater purposes what type of orbit will be the best?

a) Circular orbit
b) Elliptical orbit
c) Geosynchronous orbit
d) Triangular orbit

31.What is the point on the surface of the earth that is directly below the satellite called?

a) Satellite point
b) Subsatellite point
c) Supersatellite point
d) Overhead point

32. Satellite launch sites are invariably located on Eastern seaboards to ensure that

a. launch takes place eastward
b. expenditure of propulsion fuel is reduced during plane changing
c. the satellite achieves circular orbit quickly
d. spent rocket motor and other launcher debris falls into the sea

UNIT-II-SPACE SEGMENTS

1.The TT&C system allows an earth station controlling a satellite to:

a. Send commands to the satellite
b. Change the satellite orbits
c. Receive status data from the satellite
d. All the above

2.A transponder is a device on a satellite which:

a. Controls temperature
b. Receives and transmits signals
c. Sends out warning pulses

3. Which of these parts are not found on a spinner satellite:

a. Momentum wheels
b. Gas jets
c. **Solar sails**

4. Which of the following is not an axis motion of a spacecraft:

a. Roll
b. Pitch
c. Gyrate
d. Moment
e. Yaw

5. A spinner uses an earth sensor to control which of these:

a. Antenna pointing
b. Body temprature
c. Gas jets

6.Momentum wheels must be unloaded because of this effect:

a. Sunlight
b. Solar pressure
c. Constant forces

7. A north-south earth station keeping maneuver moves geostationary satellite in this direction with respect to the orbit plane:

a. around it
b. perpendicular
c. towards earth

8.An East-west station keeping maneuver moves geostationary satellite in this direction with respect to the orbit plane:

a. around it
b. towards the N or S poles
c. towards earth

9. Geostationary satellites usually keep inclination angle with the box of:

a. 0.1˚
b. 0.25 ˚
c. 0.5 ˚

10. A telemetry system sends the follwing signals to earth:

a. Voice
b. Television
c. Status data
d. Radar

11.The Location of a satellite is determined by measuring:

a. Its range
b. Doppler shift of a carrier
c. TDM

12.Power is generated of a satellite by

a. Solar cells
b. Nuclear fussion
c. Solar wind

13. Batteries are needed on a satllite during:

a. Solar eclipse
b. Launch sequence
c. Sun transit

14.How much electrical power do large satellite launched in the mid-1980s generate?

a. 200W
b. 2KW
c. 20kW

15. Which of these of bqatteries are used on satellite:

a. Lead acid
b. Nickle-cadmium
c. Zinc carbon

16.Solar cells have end of life efficiency about:

a. 5%
b. 10%

c. 15%
d. 20%
e. 25%

17.Cost per telephone circuit has fallen because this parameter of the satellite has increased:

a. Weight
b. Bandwidth
c. Lifetime
d. Transmit Power

18. The widely used satellite bands are

a. 2/4 GHz
b. 6/4 GHz
c. 14/11 GHz
d. 30/20 GHz

19.Systems operating at 6/4 GHz are often said to be in:

a. V band
b. KU band
c. C band
d. S band

21. A 14/11 GHz satellite communication system uses 14GHz as:

a. Uplink
b. Downlink
c. Uplink and downlink

22.The bandwidth used in 6/4 GHz satellite communication system is:

a. 250MHz
b. 500MHz
c. 1000MHz

23.Modern communication satellites carry this many transponders:

a. One
b. Two
c. More than 12
d. More than 50

24.Frequency reuses increases the communication capacities of a satellite using following techniques:

a. Orthogonal polarisation
b. Multiple frequencies
c. Multiple Beams
d. Many transponders

25.On-board processing can be used to modify the received signal at a satellite in the following way:

a. Changing its frequency
b. Changing its modulation
c. Adding forward error correction
d. Amplification

26.A TWTA is a:

a. Ten-watt tube amplifies
b. High power amplifier (HPA)
c. Travelling wave tube amplifier
d. Total Wave type action

27.Satellite uses the following types antenna:

a. Reflector
b. Wire
c. Helix
d. Horn
e. Omnidirectional
f. Bicone

28. The angle subtended by the earth's disk from geostationary altitude is:

a. 8.5 ˚
b. 17 ˚
c. 34 ˚
d. 90 ˚

29. To create global beam from geostationary satellite use a:

a. Reflector
b. Bicone
c. Dipole
d. Horn

30. To create spot beam which antenna would you use?

a. Reflector
b. Bicone
c. Monopole
d. Horn

31. A horn with an aperture 4 wavelengths on a side has a beamwidth around:

a. 10 ˚
b. 18 ˚
c. 36 ˚
d. 60 ˚

32. To generate a spot beam which is 3 ˚ width at 11GHz requires reflector with an aperture width of about:

a. 0.34m
b. 0.50m
c. 0.68m
d. 0.85m

33. The antenna generates multiple antennas must have a:

a. Horn
b. Reflector
c. Feed array

34.The gain of the circular aperture with diameter of 1.0 m and efficiency 60 % at a 14GHZ frequency is:

a. 41.1dB
b. 43.3dB
c. 38.1dB
d. 19.4 dB

35. The transmitter-receiver combination in the satellite is known as a _____

a)Relay
b) Repeater
c) **Transponder**
d) Duplexer

36. The downlink frequency is lower than the uplink frequency.

a) True
b) False

37. What is the reason for carrying multiple transponders in a satellite?
a) **More number of operating channel**
b) Better reception
c) More gain
d) Redundancy

38.Which of the following is not a part of the propulsion subsystem of a satellite?
a) Gyroscope
b) Jet thruster
c) AKM
d**) Fuel control system**

39.Which of the following is not a satellite subsystem?
a) **Ground station**
b) Power system
c) Telemetry tracking
d) Communication subsystem

40. Which of the following transponders convert the uplink signal to downlink signal using two mixers

a) Single conversion transponders

b) Dual conversion transponders

c) Regenerative transponders

d) Dual mixer transponder

UNIT-III SATELLITE LINK DESIGN

1. The 6/4 GHz bands are popular for satellite communication because:
    - **a. Microwave equipment is readily available**
    - **b. Propagation problems are minimal**
    - **c. Antennas have reasonable dimensions**
2. System using the 30/20 GHz band are less popular because:
    - **a.** Antennas are larger than at 6/4 GHz
    - **b. Propagation problems are more severe**
    - **c.** The bandwidth allocated for satellite communications is smaller than at 6/4 GHz
3. Flux density is measured in units of:
    - a. Watts
    - b. Watts/meter
    - **c. Watts/m^2**
4. Which of the following C/N ratios would allow a receiver to demodulate a radio signal?
    - **a.** 0dB
    - **b.** -10dB
    - **c. +10dB**
    - **d. +30dB**
5. An Isotropic antenna radiates a beam:
    - a. In one direction
    - **b. In all direction equally**
    - c. With circular polarization
6. An antenna with an EIRP of 20 watts creates flux density at distance of 1000m of:
    - **a.** 1.59 $x10^{-3}$ w/m^2
    - **b.** 1.59x 10^{-6} w/m^2
    - **c.** 5.00$x10^{-6}$ w/m^2
    - **d. -58.0dBw/m^2**

7.An antenna with an effective aperture area of 10 m^2 and an aperture efficiency of 60% has an effective area of:

a. 34.0 dB

b. 42.0dB

c. 47.0dB
d. 50.0dB

8. A satellite is 40000km from an earth station. The earth station transmitts at a frequesncy 6 GHz. What is the path loss?

a. 100dB
b. 200dB
c. 213dB
d. 226dB

9. the earth station is 40000km from a satellite has an EIRP of 60dBW.If the stellite has a receiving NTENNA WITH a GAIN of 26dB,is the received power at the satellite:

a. -114dBW
b. -104dBW
c. -124dBW
d. -144dBW

10. A passive source has a physical temperature of 320 ˚K and is matched to a noiseless power measurement meter with a bandwidth of 100MHz. Does the meter read:

a. -183.5dBW
b. -153.3dBW
c. -123.5dBW
d. -18.5dBW

11. An active device has a noise output of -126dBW, measured in a bandwidth of 10MHz.Is its noise temperature:

a. 42.7K
b. 32.6 K
c. 385K
d. 1820K

12. a mixer has a noise figure of 9dB.Is its noise temperature:

a. 530K
b. 2014K
c. 2320K
d. 2681K

13. An antenna with a noise temperature of 50 K is followed by a LNA with a noise temperature of 75K and a gain of 20dB. Is the system noise temperature for this combination:

a. 50.75K
b. 57.5K
c. 125K
d. 800K

14. Noise temperature is measured in units of:

a. Degrees
b. Degrees kelvin
c. Kelvins

15. The G/T ratio of an earth station characteristics its:

a. C/N ratio for a given system
b. The system noise temperature of the receiver
c. The gain of the earth station antenna

16. The margin in a downlink is the extra C/N provided to:

a. Improve the S/N under clear air conditions
b. Allow for rain attenuation on the paths
c. Give an FM improvement

17. Intelsat downlink with large earth station antenna are designed with a margin of:

a. 3dB
b. 5dB
c. 7dB
d. 10dB

18. An Intelsat global beam transponder carries fewer than this number of telephone channels:

a. 6000
b. 2000
c. 1000
d. 400

19. Which of the following techniques will lower the cost of a link compared to the Intelsat global system?

a. Use large earth station antenna
b. Use smaller earth station antenna
c. SSB with companding
d. Spot beams on the satellite

20. 10 ft antennas can be used for satellite TV reception in the US because:

a. Domestic satellites have global beams
b. Domestic satellites have spot beams
c. Domestic satellites use two polarization
d. Receivers use FM threshold extension demodulators

21.Which figure is typical C/N margin for home satellite TV systems?

a. 10dB
b. 5dB
c. 2dB
d. -2dB

22.Which frequency bands are currently used for mobile satellite communication systems?

a. 14/11GHz
b. 6/4 GHz
c. 1.6/1.5 GHz
d. 850MHz

23.Which of these features is needed in low-cost earth stations for a single channel two-way link?

a. Low power transmitter
b. Small earth station antenna
c. Low-noise receiver

24.Compared to the received power level at the input to an earth station receive, the power at the input to the satellite is:

a. Higher
b. Lower
c. About the same

25. An earth station transmits an EIRP of 22dB at 6GHZ.the range to the satellite is 36000km.Is the flux density in dBW/m^2 at the satellite:

a. -72.1
b. -85.1
c. -90.1
d. -95.1

26. The required flux density at a satellite is -85dBW/m^2 at 14GHz. For an earth station at 40,000km range is:

a. 72.9dBW
b. 78.0dBW
c. 82.1dBW
d. 85.4dBW

27. An earth station has a C/N of 16dB in clear air, ignore thermal noise radiated by the satellite transponder. Rain attenuation of 3dB occurs on the downlink. Is the C/N:

a. 10dB
b. 13dB
c. 16dB
d. 19dB

28. A transponder has (C/N)sa =21dB and transmits to an earth station with (C/N)es =17.5dB. Rain attenuates the downlink signal by 5 dB. Will the overall earth station C/N be:

a. 17.5dB
b. 13.7dB
c. 11.9dB
d. 10.9dB

29. A satellite operates at a frequency of 11.5GHz.rain at a uniform rainrate of 50mm/hr extends for exactly2km along the slant path. What is the rain attenuation on the downlink?

a. 1dB
b. 2dB
c. 3dB
d. 4dB

30. An earth station is at sea level at latitude of 48 degrees N. Rain falls at less than 10mm/hrs. What is the expected path length in rain for the slant path elevation angle of 25 degrees?

a. 3.0km
b. 4.8km
c. 6.2km
d. 7.1km

31. A transponder has (C/N)sa =21dB and transmits to an earth station with (C/N)es =17.5dB. Rain attenuates the uplink signal by 5 dB. Will the overall earth station C/N be:

a. 17.5dB
b. 13.7dB
c. 11.9dB
d. 10.9dB

UNIT-IV-SATELLITE ACCESS CODING METHODS

1.Telephone channels occupy the frequency spectrum between:

a. 0-4000Hz
b. 300-3400Hz
c. 300-3100Hz

2. The reference power level in a telephone channel usually:

a. -15dBm
b. 0dBm
c. +15dBm
d. 1mW

3. The first level of FDM is

a. A group
b. A subgroup
c. 12 channels
d. 60 channels

4.Which of the following bandwidth would be normally used to carry 132 FDM channels?

a. 240kHz
b. 660kHz
c. 528kHz
d. 400kHz

5. A frequency modulator has a constant of 1kHz/V. a sine wave with a peak amplitude of 1 V applied is the peak frequency deviation of the FM wave.

a. 100Hz
b. 1kHz
c. 1.414kHz
d. 2kHz

7. A baseband with a maximum frequency of 48kHz is applied to an FM modulator. The peak deviation of the FM wave is 100kHz.Is the bandwidth of the FM signal?
   a. 96kHz
   b. 148kHz
   c. 296kHz
   d. 392kHz
8. An FM wave has a peak deviation of 1MHz and occupies a bandwidth of 2.48MHz. Is the highest frequency in the baseband:
   a. 48kHz
   b. 96kHz
   c. 240kHz
   d. 292kHZ
9. An FDM baseband has maximum frequency 4.2 MHz. The RF bandwidth of the FM signal is 36 MHz. Is the peak deviation:
   a. 0.2MHz
   b. 9.6MHz
   c. 12.1Mhz
   d. 13.8MHz

10. A video signal has a bandwidth of 4.2MHz. It drives an FM modulator giving peak frequency deviation of 10MHz and FM bandwidth of 28.4 MHz. The signal is received with C/N ratio of 20dB. What is the S/N ratio in dB at the demodulator's output?
    a. 483
    b. 1150
    c. 3450
    d. 5750

11. What is FM improvement factor (in DB) in the question no 10.

a. 17.6dB
b. 19.4dB
c. 22.4dB
d. None of the above

12.The bandwidth required for an FDM baseband is approximately 4.2 N kHz. Where N is the number of channels. How many channels will fit into a baseband with bandwidth 500kHz

a. 42
b. 100
c. 104
d. 119

13. An FDM baseband contains 12 telephone channels and extends from 12 to 60kHZ. It is FM modulated onto a 4000 MHz carrier and sent by satellite using an RF bandwidth of 500kHz. If the rms multi-channel deviation is 109kHz, find the test tone rms deviation using the appropriate loading rule in kHz?

a. 67.1
b. 74.4
c. 159.1
d. 200.2

14. A speech signal is transmitted using single channel per carrier FM. The peak frequency deviation is set to 22kHz, and the maximum baseband frequency is 3.4kHz. The RF bandwidth used is 50kHz. A psophometric weight of 2.5dB and a preemphasis improvement of 10dB are assumed. If the received signal has a C/N of 11dB, is the baseband S/N:

a. 31.5dB
b. 44.0dB
c. 45.0dB
d. 51.4dB

15. Digital transmission system are preferred over analog systems for the following reasons:

a. Voice and data can be mixed in the same channel
b. TDMA can be used in satellite link
c. Signals can be stored and recovers easily
d. All the above

16.The performance of the digital link characterised by

a. C/N
b. S/N
c. PCM
d. BER

17. Zero ISI in digital link does which of the following?

a. Eliminates interference between pulses
b. Causes interference between pulses
c. Narrow bandwidth required to send a pulse

d. Increases the BER

18.Given a baseband link with a bandwidth of B Hz, the maximum rate at which pulses can be transmitted using ideal filters is:

a. B/2 bps
b. B bps
c. 2Bbps
d. 4Bbps

19. Using ideal Nyquist filter with alpha = 1, the maximum rate for baseband link with bandwidth of 4000Hz is:

a. 2000bps
b. 4000bps
c. 8000bps
d. 10kbps

20. Which of the following is Not a digital modulation?

a. ASK
b. BPSK
c. MSK
d. VSB

21. An audio signal is bandlimited to the frequency range 100-9,500Hz. Which of the following sampling rates should permit the signal to be recovered without distortion?

a. 10kHz
b. 18kHz
c. 22kHz
d. 38kHz

22. Sampling rate used internationally in PCM systems is

a. 3100Hz
b. 3400Hz
c. 8000Hz
d. 10000Hz

23.PCM is preferred transmission techniques for digital speech signals because it can be:

a. Regenerated
b. Passed through nonlinear amplifier
c. Used to reduce the bit rate for transmission
d. Handled directly by digital computers

24.PCM is derived from 8kHz samples and an 8bit ADC have bit rate of:

a. 8kbps
b. 56kbps
c. 64kbps
d. 128kbps

25.Quantization noise is result of:

a. Sampling
b. Analog to digital conversion
c. Low pass filtering
d. Non-linear amplification

26.Companding reduces quantization noise by utilizing which of the following effects?

a. Sampling at 8 kHz
b. Low pass filtering at 3.4kHz
c. Non-linear analog to digital conversion
d. Physiological characteristics of human ear

27. A telephony system uses linear encoding with 7-bit words and 8kHz sampling. What is the transmission bit rate?

a. 8kbps
b. 56kbps
c. 64kbps
d. 128kbps

28. Which of the following number of speech channels can be fitted in to a T1 PCM carrier?

a. One
b. 12
c. 24
d. 30

29. A 36 MHz transponder is shared by four earth stations which transmit in FM/FDM/FDMA mode. Each earth station transmits five FDM basebands each containing 24 telephone channels. Is the total number of telephone channel in the transponder?

a. 120
b. 180
c. 480
d. 960

30. A 36 MHz transponder is shared by four earth stations which transmit in FM/FDM/FDMA mode. A guard band of 1.5MHz is used between the earth's station transmission. If each telephone channels in FDM/FM carrier require 50kHz bandwidth, How many channels can transponder carry?

a. 600
b. 630
c. 720
d. 960

31. A 36 MHz transponder is accessed by the single earth station with a QPSK carrier carrying data at a bit rate of 60Mbps. Data are sent in 2ms frames with a preample of 288bits. What is the message data rate through the transponder?

a. 59.712Mbps
b. 59.856Mbps
c. 60.000Mbps

32.A 36 MHz transponder is accessed by the three-earth station in TDMA mode. Assuming equal sharing between accesses and no guard times, what is the message data rate for each earth station?

a. 19.904 Mbps
b. 19.952 Mbps
c. 20.000 Mbps

33.A 36 MHz transponder is accessed by the three-earth station in TDMA mode. Assuming equal sharing between accesses and guard time of 2 microsecond is allowed between the access, what is the message data rate for each earth station?

a. 19.712 Mbps
b. 19.796 Mbps
c. 19.904 Mbps

34. A satellite is drifting away from an earth station at a rate of 1.5m/s. the transponders are operated in TDMA with a frame length of 2ms. What is the increment in time for one earth station's transmission into the frame each second?

a. 1.0ns
b. 5.0ns
c. 10ns
d. 20ns

35. A satellite is drifting away from an earth station at a rate of 1.5m/s. and no corrective action is taken to retime transmissions; how long would it take for the transmission to move across a 1 microsecond guard band into another slot?

a. 100s
b. 200s
c. 300s
d. 1000s

36. a (34,22) code has this many numbers of message bits:

a. 2
b. 22
c. 34
d. 56

37. If the minimum distance of the code(34,22) is 11,then how many errors could this code detect?

a. 5
b. 10
c. 12
d. 22

UNIT-V- Satellite Applications

1.What is the primary use of communication satellites?

a) Telephone service
b) Surveillance
c) Research
d) GPS

2.Which of the following is not a reason for redistributing TV signals through satellites rather than skywaves or spacewaves?

a) High frequency signal
b) Long distance communication
c) Economically feasible
d) Power requirements

3. Which frequency band does the direct broadcast satellite system use?

a) C band
b) X band
c) Ku band
d) MF band

4. What type of satellite TV service uses compressed data transmission to beam signals directly to every home?

a) Direct broadcast satellite
b) Mobile satellite service
c) Broadcasting satellite service
d) Fixed satellite service

5.What is the number of satellites present in the Iridium system?

a) 72
b) 51
c) 66
d) 32

6. Which frequency band is used for connecting the satellite system with the public switched telephone network?

a) L band
b) Ku band
c) C band
d) Ka band

7. India's first domestic geostationary satellite 1NSAT-IA was launched on 10th April 1982 from

a) USSR
b) **USA**
c) UK
d) UP

8. What band does VSAT first operate?

a) L-band
b) X-band
c) **C-band**

d) Ku-band

9. VSAT was made available in ……..

a) **1979**
b) 1981
c) 1983
d) 1977

10. The INTELSAT-IV satellite launched in 1974 had two earth coverage antenna and two narrower-angle antennas subtending 4.5°. The signal from narrow-angle antenna was stronger than that from earth- coverage antenna by a factor of ……

a) 17.34/4.5
b) 17.34/4.5
c) **(17.34/4.5)2**
d) (17.34/4.5)4

11.Of the four INSAT-I satellites planned by India so for, only …… has proved to be successful.

a) INSAT-IA
b) INSAT-IB
c) INSAT-IC
d) INSAT-ID

12. As compared to 17.34° antenna, the total increase in the signal relayed by 4.5° antenna of INTELSAT-IV is …….

a) 14.85
b) 220
c) 78
d) 3.85

13. The useful operational life of INSAT-IB (launched in 1983) is expected to end by

a) 1992-93
b) 1991-92
c) 1989-90
d) 1993-94

14. The geostationary communication satellite APPLE is parked in the equatorial orbit at

a) 102° E longitude over Sumatra
b) 90° E longitude over Bangladesh
c) 74° E longitude over India
d) 67° E longitude over Pakistan

15. INTELSAT stands for …….

a) Intel Satellite
b) International Telephone Satellite
c) International Telecommunications Satellite
d) International Satellite

16. The 1150 kg geosynchronous satellite INSAT-IA parked 36000 km above India had greatly improved India's

a) intelligence gathering capacity
b) domestic communications
c) meteorological capability
d) both (b) and (c)

17. Presently, the worlds's largest and most advanced multi-purpose communication satellite is

a) INSAT-2
b) Intelsat-V

c) INSAT-ID
d) Olympus-I

18. Master control facility (MCF) for INSAT-2 series satellites is located at ……..
a) Madras
b) New Delhi
c) Leh
d) Hassan

19. The communication satellite INSAT-IB had to take up the job of INSAT-IA because the latter collapsed within …… months of its launch.
a) 12
b) 20
c) **5**
d) 36

20.For global communication, the number of satellites needed is
a) 1
b) 3
c) 10
d) 5