SATELLITE COMMUNICATION AND BROADCASTING

UNIT (1-5) MCQS

UNIT – 1

1. The line joining the ascending and descending nodes through the center of the earth is called

   (A) Line of aries

   (B) Point of node

   (C) Line of nodes

   (D) Line of earth

2. The perigee and apogee of an elliptical satellite orbits are 600 km and 3000 km the value of semi major axis is

   (A) 180 km

   (B) 2000 km

   (C) 1800 km

   (D) 3600 km

3. The inclination of polar orbit is around

   (A) 90°

   (B) 360°

   (C) 45°

   (D) 30°

4. An average value of the angular position of the satellite with reference to the perigee is called

   (A) True anomaly

   (B) Average abnormality

   (C) Mean anomaly

   (D) Average apogee

5. Based on the analysis of a non-spherical earth effect, the shape of the earth described as

   (A) Flattering at the pole

   (B) Equatorial bulge

   (C) Oblate spheroid

   (D) Spherical

6. Universal time in the normal form of hrs, mins and seconds, it is converted to fractional days as

   (A) UT days $\frac{1}{24}$ (hours + minutes /60+ seconds/3600)

   (B) UT days $\frac{1}{24}$ (hours x minutes /60+ seconds/3600)

   (C) UT days $\frac{1}{24}$ (hours x minutes /60 x seconds/3600)

   (D) UT days $\frac{1}{24}$ (hours + minutes /60 x seconds/3600)

7. Calculate the angle between the radius to the earth station and the radius to the north pole for an earth-station antenna located at 35°N.

   (A) 45°
   (B) 55°
   (C) 130°
   (D) 65°

8. The line joining the perigee and apogee through the center of the earth is known as

(A) Descending node

(B) Ascending node

(C) Lien of apsides

(D) Line of nodes

9. How many triangles are used in determining the look angles for a geostationary satellite?

(A) Three

(B) Two

(C) One

(D) Four

10. If the orbit is in circular form, then its eccentricity is

(A) e>0

(B) e<0

(C) e=0

(D) e=1

11. From Kepler's law, it states that for equal time intervals, satellite sweep out

(A) Unequal

(C) Less

(B) Equal

(D) More

12. The point where the orbit crosses the equatorial plane going from north to south is known as

(A) Ascending node

(C) Line to apsides

(B) Descending node

(D) Line of nodes

13. The sun appears as an extremely noisy source which completely blanks out the signal from the satellite and this effect is termed as

(A) Geostationary

(C) Satellite

(B) Sub satellite

(D) Sun transit outage

14. Universal time in the normal form of hrs, mins and seconds, it is converted to fractional days as

(A) $UT_{days} = \frac{1}{24}$ (hours x minutes /60 + seconds/3600)

(B) $UT_{days} = \frac{1}{24}$ (hours + minutes /60 x seconds/3600)

(C) $UT_{days} = \frac{1}{24}$ (hours x minutes /60 x seconds/3600)

(D) $UT_{days} = \frac{1}{24}$ (hours + minutes /60 + seconds/3600)

UNIT -2

1. BCH, Reed Solomon and hamming codes are classified as

(A) Error codes

(B) Compression codes

(C) Block codes

(D)Convolution code

2.Find the effective area of isotropic antenna (4], if frequency is 10 GHz

(A)15 Db

(B)2.1 dB

(C)-10 dB

(D)-41.45 dB

3.Unit of carrier-to-noise spectral density ratio is

(A)Db

(B)DHz

(C)dw

(D)dBHz

4. Forward error correction codes are employed in satellite communication to

(A)Increase complexity

(B)Avoid redundancy

(C)Increase power consumption

(D)Avoid retransmission

5. The link from earth-station to satellite segment is called

(A) Down link
(B) Uplink
(C) Both downlink and uplink
(D) Line of sight

6. The factors related to satellite system design are

(A) Multiple access technique

(B) Transmission losses

(C) Radiated paver

(D) Noise

7. The losses occur due to connecting waveguides, filters and couplers are due t o

(A) Antenna misalignment losses

(B) Free space losses

(C) Feeder losses

(D) l o n o s p h e r i c l o s s e s

8. The advantage of forward error correction is

(A) Complexity

(B) Fixed size

(C) Soft decision algorithms

(D) Retransmission of data

9. Identify, the band which undergoes signal fading due to rainfall?

(A) X-band

(B) S-band

(C) C-band

(D) VHF band

10. The satellite orbit close to the earth is.

(A) Apogee

(B) Perigee

(C) Prograde

11. The overall noise temperature Te, absolute temperature T and noise figure F are related as

(A) T_e=T(F-1)

(B) T_e = F(T -1)

(C) T= T_e (F -1)

(D) T_e = (T)(F)

12. The relationship between [BO), and [BO], is

(A) $[BO]_o = [BO]_i$ -10dB

(B) $[BO]_o = [BO]_i$ -6dB

(C) $[BO]_o = [BO]_i$ -5dB

(D) $[BO]_o = [BO]_i$ -15dB

13. The effective noise temperature of the rain is given by

(A) $T_{rain} = Ta\ [1- A]$

(B) $T_{rain} = Ta\ [1+ A]$

(C) $T_{rain} = Ta\ [I + \frac{1}{A}]$

(D) $T_{rain} = Ta\ [I - \frac{1}{A}]$

14. A satellite link is operating at 14 GHz has receiver feeder loss of 1.5 dB and free space loss 207 dB. The atmospheric absorption loss in 0.5 dB, antenna pointing loss is 0.5 dB depolarization loss is neglected. What is the total line loss for clear sky condition?

(A)209.5 dB

(B) 210.5 dB

(C)219.5 dB

(D)220.5

UNIT – 3

1. Reaction wheels are used in_____ stabilized systems.

(A) One-axis

(B) Three-axis

(C) Seven-axis

(D) Cube

2. Radiation mirrors and thermal blankets are used in satellite

(A) To increase payload

(B) To offer stability

(C) To generate power

D) To maintain temperature

3. Spot beams and polarization reuse methods are employed to

(A) Increase bandwidth

(B) D e c r e a s e power

(C) Increase power

(D) Maintain attitude

4. Cable TV operators employ _____ to receive signals from satellites.

(A) Direct to home systems
(B) Community antenna systems
(C) Whip antenna system
(D) Isometric antenna system

5. The equipment used to provide the service for which the satellite has been launched refers as _____

(A) Ground segment
(B) Payload
(C) Space segment
(D) Thermal control

6. The spin rate is typically in the range of_____ during the launch phase.

(A) 100 to 50 rev/min

(B) 50 to 100 rev/mir

(C) 150 to 10 rev/min

(D) 10 to 150 r e v / min

7. Which subsystem transmits information about the satellite to the earth station?

(A) Tracking
(B) Telemetry
(C) Command
(D) Acquisition

8. In satellite subsystems, high power can be achieved with solar panels arranged in the form o f_____ solar sails.

(A) Spherical

(B) Circular

(C) Rectangular

(D) Elliptical

9. How many attitude control for the purpose of controlling satellite attitude?

(A) Two

(B) Three

(C) One

(D) Four

10. In a spin stabilized GEO satellite, the spin axis is

(A) Perpendicular to the orbital

(B)In the plane of the orbit plane

(C) Inclined at 45^{O} at the orbital plane

(D) Inclined at 6^{O} to the orbit plane

11. The available bandwidth of a C-band transponder is

(A) 600 MHz

(B) 500 MHz

(C) 550 MHz

(D) 1000 MHz

12. The satellite in which the antenna is mounted on a despun platform is ' 2 3 1

(A) Geostationary satellite

(B) Sun synchronous satellite

(C) Spin stabilized satellite

D) 3-axis body stabilized satellite

13. The satelite altitude may be altered along normal to the orbital plane is called as ___

(A) Yaw axis

(B) Pitch axis

(C) Roll axis

(D) Spin axis

14. The isotropic power gain for a paraboloidal antenna in antenna subsystem 1 3 1

(A) $G = n (\pi D^2/ \lambda)$

(B) $G = n (\pi \lambda^2/ D)$

(C) $G = n (\pi D/ \lambda)^2$

(D) $G = n (\pi D/ \lambda^2)$

UNIT – 4

1. A carrier occupies the whole of the available bandwidth of a transponder. This types of access is called

(A) Multiple access

(C) Single access

(B) Full access

(D) Uni access

2. The reason behind the frame period is chosen to be multiple of 125 us is

(A) To match sampling rate of pulse code modulation

(B) To built the encoder

(C) To make good receiver

D) To match quantization level of pulse amplitude modulation

3. The number of earth stations that can be accommodated in common 1 signaling channel of SPADE system excluding reference station is

(A) 50

(B) 49

(C) 12

(D) 128

4. Multiple access scheme that relies on spread spectrum technique is called

(A) Time division multiple access

(B) Frequency division multiple access

(C) Space division multiple access

(D) Code division multiple access

5. CDMA technique is a _____

(A) Demand assigned system

(C) Random access system

(B) Pre-assigned system

(D) Single access system

6. In TDMA system, which frame section provides a carrier and bit timing recovery channel?

(A) Postamble

(C) Burst code word

(B) Preamble

(D) Guard time

7. Which timing control, the earth station receives its own transmission?

(A) Open-loop timing control

(B) Loop back timing control

(C) Feedback timing control

(D) Feedback closed loop timing control

8. In preassigned TDMA,, the common signaling channel(CSC)c a n accommodate up to earth stations.

(A) 94

(B) 48

(C) 49

(D) 50

9. How many pseudonoise sequence (PN) can be generated by using 3-stage shift register?

(A) 6
(B) 5
(C) 7
(D) 4

10. _____ is the multiple access technique, where the full bandwidth is used by all users for all time.

(A) FDMA

(B) TDMA

(C) **CDMA**

(D) LDMA

11. A form of CDMA, where a digital code is used to continually change the frequency of the carrier is_____

(A) Frequency hopping

(B)Spread spectrum

(C) Store and forward

(D) SPADE

12. In FDMA technique, the voice band channels are assigned on "as needed" basis

(A) PAMA

(B) SSMA

(C) CDMA

(D) DAMA

13. The multiple earth stations share a satellite on the same frequencies using____ technique.

(A) Frequency reuse

(B) Multiplexing

(C) Mixing

(D) Frequency hopping

14. The satellite sends different information signals using vertical/horizontalelectromagnetic polarization is _____

(A) Multiple coverage across

(B) Dual polarization

(C) Spatial separation

(D) Spread spectrum

UNIT- 5

1. MPEG 1 audio layer 3 is popularly known as

(A) MP4

(B) AAL

(C) MP3

(D) Bluetooth

2. The number of bits generated by 30 seconds streo quality compact disc recording is

(A) 1.4 Mbits

(B) 18000 bits

(C) 42 Mbits

D) 520 Kbits

3. Topology used in VSAT network is

(A) Alohz

(B) Stop and wait

(C) Ring

(D) STAR

4. Frequency bands used by satellite mobile services are

(A) L and S band

(B) Ku band

(C) K_2 and C band

(D) X and Y band

5. The service provided by Direct Broadcast satellite (DBS)

(A) Internet service

(B) Remote service

(C) Military service

(D) Sensing service

6. How many transponders typically a satellite can carry?

(A) 10

(B) 12

(C) 32

(D) 22

7. The power rating of satellite is decided by

(A) Effective isotropic radiated power

(B) Noise power

(C) Noise bandwidth

(D) Transmit power

8. Which digital modulation technique used by satellite digital television?

(A) BPSK

(B) QPSK

(C) QAM

(D) FSK

9. MPEG-1 standard used for

(A) Video compression

(B) Audio compression

(C) Image compression

(D) Text compression

10. For DBS TV transmission the downlink frequency is about

(A) 14 GHz

(B) 10 GHz

(C) 6 GHz

(D) 12 GHz

11. The type of modulation is used in DBS is_____

(A) FM

(B) AM

(C) PCM

(D) DPCM

12. Moving Picture Express Group (MPEG-2) is designed for high-quality DVD with a data rate of

(A) 3 to 6 Mbps

(B)4 to 6 Mbps

(C) 5 to 6 Mbps

(D) Only 6 Mbps

13. The minimum and maximum orbital spacing for satellite is

(A) 2° and 10°

(B) 10° and 18°

(C) 2° and 9°

(D) 12° and 19°

14. Generally the VAST network is operated in

(A) FDMA

(B) TDMA

(C) CDMA

(D) SDMA

15. How many minimum satellites are operational in the constellation of GPS?

(A) 64

(B) 42

(C) 24

(D) 32