

These are sample MCQs to indicate pattern, may or may not appear in examination

University of Mumbai
Online Examination 2020

Program: BE Electronics and Telecommunication Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year Semester VIII

Course Code: ECCDLO8043 and Course Name: Satellite Communication

Time: 1hour

Max. Marks: 50

Note to the students:- All the Questions carry equal marks .

- Q When a planet orbits the Sun, one of the foci of the elliptical orbit is
- A The axis
- B The perihelion
- C The centre
- D The Sun
- Q 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
- Q Kepler's third law is known as
- A The Law of orbits
- B The Law of Areas
- C The Law of periods
- D The Law of gravity
- Q An Astronomical Unit, or AU, is the average distance between
- A The Sun and Neptune
- B The Sun and Earth
- C The Earth and the Moon
- D The Sun and Mercury
- Q The line connecting the perigee and apogee is called as?

- A Differential line
B Line of apsides
C Line of maximum reception
D Overhead line
- Q Which layer has the atmospheric conditions exactly opposite to that of standard atmosphere?
A Depression layer
B Regression layer
C Inversion layer
D Invasion layer
- Q For global communication, the number of satellites needed is
A 1
B 3
C 10
D 5
- Q Which of the following makes the existence of ionosphere possible?
A Rotation of the Earth
B Ultraviolet radiation from sun
C Solar flares
D Radiation from distant stars
- Q A geostationary satellite is one which
A hangs motionless in space about 36000 km about Earth
B travels around the Earth in 24 hours
C remains stationary above the Earth
D appears stationary to everybody on Earth
- Q True anomaly defined as
A 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 the angle from earth station to the moon
- Q The down link frequency in the C band transponder is
A 6GHz

- B 4GHz
C 11GHz
D 14GHz
- Q The geographical representation of satellite antenna's radiation pattern is called as _____
A Satellite subpoint
B satellite payload
C satellite trajectory
D Satellite footprint
- Q Which is launching site in India?
A alcantara
B San Marco
C Plesetsk
D Shriharikota
- Q Electric field perpendicular to earth's surface is called as _____
A Horizontal Polarization
B Cross Polarization
C vertical polarization
D attenuation
- Q Define Sideral day.
A It is defined as one complete rotation of the earth relative to the fixed stars. It is measured as 23h56m04s mean solar time.
B It is defined as one and half rotation of the earth relative to the fixed stars. It is measured as 23h56m04s mean solar time.
C It is defined as one complete rotation of the earth relative to the fixed stars. It is measured as 24h mean solar time.
D It is defined as one and half rotation of the earth relative to the fixed stars. It is measured as 24h mean solar time.
- Q Bandwidth of C band used in satellite communication is
A 500kHz
B 500GHz
C 500MHz
D 500Hz

Q The orientation of the line of electric flux in an electromagnetic field is referred to as wave _____; while a change in the orientation of the electric field of satellite signal is termed _____.

A propagation;depolarization

B depolarization;polarization

C polarization;propagation

D polarization;depolarization

Q When the sun comes within the beamwidth of the earth-station antenna, the sun appears as an extremely noisy source which completely blanks out the signal from the satellite, this effect is termed as

A sun transit outage

B satellite is in solar eclipse

C satellite is in lunar eclipse

D satellite is in equinox

Q The gravitational fields of the sun and the moon produce a shift of about _____ in inclination

A $0.95^\circ/\text{year}$

B $0.85^\circ/\text{year}$

C $0.80^\circ/\text{year}$

D $0.75^\circ/\text{year}$

Q The physical location of a satellite is determined by its

A distance from the earth

B latitude and longitude

C reference to the stars

D position relative to the sun

Q Any Satellite Communication system comprises of two segments

A Space and base segment

B Ground and Space segment

C Ground and base segment

D Space and link segment

Q What kind of battery panels are used in some advance satellites?

A Gallium Phosphate solar panel

B Silicon based panels

- C Germanium based panels
D Gallium Arsenide solar panel
Q The plane of the Earth's rotation around the sun is inclined by angle
A 13°
B 23°
C 33°
D 43°
Q The three axes of spin stabilization does not include _____ axis
A Pitch
B roll
C yaw
D speed
Q Satellite engine use
A Liquid fuel
B Jet propulsion
C Ion propulsion system
D Solar jet
Q The rotation about _____ axis is called pitch in 3-axis stabilization
A X
B Y
C Z
D W
Q The gain of a typical satellite transponder is around
A 20-40dB
B 80-100dB
C 200-240dB
D 250-300dB
Q Single conversion bent pipe transponder is used for _____ band

- A K
- B Ku
- C S
- D C
- Q _____ is preferred for Satellite Communication
- A solid State amplifier
- B Hybrid amplifier
- C klystron amplifier
- D TWT amplifier
- Q At low input powers the output input relationship for TWT is _____
- A Linear
- B Non-linear
- C indirect
- D negative
- Q 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
- Q Which of the following components receives, translates the signal frequency and re-transmits the signal in a satellite?
- A Transreceiver
- B Relay
- C Transponder
- D Transducer
- Q 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 Active attitude control refers to the use of mechanisms which stabilize the satellite without putting a drain on the satellite's energy supplies.
- Q What is the local oscillator (mixer) frequency of the satellite with an uplink frequency in GHz band?
- A 3500 MHz
- B 4500 MHz
- C 2225 MHz
- D 2555 MHz
- Q The satellite subsystem that monitors and controls the satellite is the
- A propulsion subsystem
- B power subsystem
- C communications subsystem
- D telemetry, tracking, and command subsystem
- Q The control routine necessary to keep the satellite in position is referred to as
- A station keeping
- B station tracking
- C station monitoring
- D station maintaining
- Q Power received from Sun per m^2 surface area of a geosynchronous satellite is nearly..... watt.
- A 100
- B 500
- C 2000
- D 1000
- Q An earth station _____ from satellite.
- A sends signals to or receives
- B only sends signals
- C only receive signals

- D does not send or receive
- Q Which type of modulation technique is used in DBS TV ?
- A Pulse Amplitude Modulation (PAM)
- B Phase Modulation (PM)
- C Amplitude Modulation (AM)
- D Frequency Modulation (FM)
- Qis a loss of power of a satellite downlink signal due to earth's atmosphere.
- A Atmospheric loss
- B Path loss
- C Radiation loss
- D RFI
- Q The range between a ground station and a satellite is 42000 km. Calculate the free space loss a frequency of 6 GHz.
- A 100 dB
- B 150 dB
- C 175dB
- D 200.4dB
- Q 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
- Q While keeping the down-link frequency constant, the diameter of a satellite antenna is reduced by half. To offer the same EIRP over the increased coverage area, the *RF* output power has to be increases by a factor of
- A 2
- B 4
- C 8
- D 16
- Q The average noise temperature of Earth, as viewed from space, is °K

- A 254
B 303
C 100
D 500
- Q Intermodulation distortion in high power amplifier can result in signal product which appear as noise and it is known as
A Intermodulation distortion
B Intermodulation noise
C noise power spectral density
D noise power spectral density
- Q A TVRO installation for use with C-band satellite (download frequency at 4 GHz), has a diameter of about 3.5 meters and an efficiency of 60%. Calculate the gain.
A 41 dB
B 19 dB
C 29 dB
D 9 dB
- Q Effective radiated power of an isotropic radiator can be given as a product of
A Radiated power and received power
B Effective area and physical area
C Transmitted power and transmitting gain
D Receiving power and receiving gain
- Q Which is the primary cost for degradation of error performance?
A Increase in signal to noise ratio
B No signal distortion
C Signal distortion & Loss in signal to noise ratio
D Increase in signal power
- Q Path loss L_s is dependent on
A Signal power
B Effective area
C Wavelength
D Antenna size

- Q Which of the following antenna radiates power with unit gain uniformly in all directions?
- A Directional antenna
- B Dipole antenna
- C Isotropic antenna
- D Loop antenna
- Q Noise figure is a parameter that represents a _____ of the system.
- A Noisiness
- B Efficiency
- C Maximum output
- D Maximum power handling capacity
- Q AM-to-PM conversion brings about
- A Amplitude variation
- B Phase variation
- C Frequency variation
- D magnitude variation
- Q The major source of electrical noise in equipment is arises from the random thermal motion of electrons in various resistive and active devices in the receiver is called
- A Shot Noise
- B Flicker noise
- C Thermal Noise
- D Man Made noise
- Q For large ground-based C-band antennas, the total antenna noise temperature is typically about _____ under clear-sky conditions
- A 65K
- B 60 K
- C 50K
- D 70K
- Q The carrier to noise ratio for a satellite not depends upon
- A Effective Isotropic Radiated power
- B Bandwidth.
- C Type of modulation

D	Free space path losses
Q	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	1.72dB
B	17.2dB
C	1.72dBHz
D	17.2dBHz
Q	If the transmit power is a specified constant, rather than the EIRP, then the _____ will increase with increasing _____ for given antenna dish sizes at the transmitter and receiver.
A	transmitted power; frequency
B	frequency; received power;
C	received power; frequency
D	frequency; transmitted power;
Q	Rainfall degrades the received [C/N0] in two ways by _____
A	amplifying the carrier wave and by increasing the sky-noise temperature
B	attenuating the carrier wave and by increasing the sky-noise temperature
C	attenuating the carrier wave and by decreasing the sky-noise temperature
D	amplifying the carrier wave and by decreasing the sky-noise temperature
Q	A TVRO installation for use with C-band satellite (download frequency at 4 GHz), has a diameter of about 3.5 meters and an efficiency of 60%. Calculate the gain.
A	41 dB
B	19 dB
C	29 dB
D	9 dB
Q	VSAT was made available in
A	1979
B	1981
C	1983

D	1977
Q	Which mode is used for in downlink mode of transmission from hub to VSAT
A	Time division multiplex
B	Frequency division multiplex
C	Amplitude division multiplex
D	Multiple access network
Q	Average number of VSAT count used in network given by formula
A	$N=SR/tL$
B	$N=R/StL$
C	$N=SRt/L$
D	$N=S/StL$
Q	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	Not planned
Q	Which of the following position services provided by the GPS require crypto keys?
A	Precise position service
B	Standard position service
C	Ultimate position service
D	Doppler position service
Q	Which of the following is first commercial satellite?
A	Early bird
B	Telstar
C	Explorer
D	Courier
Q	Which of the following position services provided by the GPS require crypto keys?
A	Standard position service
B	Precise position service

C	Ultimate position service
D	Doppler position service
Q	Space optical communication depends upon
A	LASER beam
B	LASER array
C	LED beam
D	LED array
Q	Aeronautical mobile-satellite service(AMSS) is defined as a mobile-satellite service in which mobile earth stations are located _____.
A	on board aircraft;
B	on board ships;
C	on land
D	on building
Q	Which frequency spectrum allocated for MSS between 1.5 and 2.5 GHz, with the upper portion often referred to as the S-band.
A	L band
B	C band
C	S band
D	X band
Q	Which of the following indicates the operations performed by the control segment?
A	Identifying bands
B	Merging signals
C	Controlling space vehicle
D	Determining wavelengths
Q	Which is the main parameter used in pseudo ranging in GPS?
A	Time
B	Distance
C	Velocity
D	Frequency
Q	In GPS pseudo ranging, travel time is measured by _____
A	PRN code
B	Noise code

C	SPS
D	GPS
Q	What type of antenna is used in GPS systems?
A	Yagi antenna
B	Helical array antenna
C	Loop antenna
D	Parabolic antenna
Q	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	Channel
B	Frequency reuse
C	Transmit information
D	Receive information
Q	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	The VHF band
Q	The IDU must be able to receive any of the 32 transponders, although only _____ of these will be available for a single polarization.
A	8
B	16
C	24
D	32
Q	Inmarsat-stands for
A	Indian Maritime SATellite
B	International Maritime SATellite
C	Indian Mobile and radio SATellite
D	International Mobile and radio SATellite

Q	What is the number of satellites present in the Iridium system?
A	72
B	51
C	66
D	32
Q	How is the velocity of an aircraft measured by passive radio systems?
A	Doppler shift
B	Velocity data is transmitted by the aircraft and received by the station
C	Secondary surveillance method
D	Satellite mapping
Q	_____ is the error in determining position relative to an earth referenced coordinate system?
A	Absolute error
B	Repeatable error
C	Relative error
D	Differential error
Q	The Iridium system can be used for Navigation, Voice, Fax, Paging and
A	SMS
B	GPS
C	MMS
D	DATA
Q	The concept of the Iridium system was Initiated by
A	Siemens
B	Motorola
C	Samsung
D	Nokia
Q	The trilateration of Global Positioning Service (GPS) means using
A	7 Distance
B	5 Distance
C	3 Distance
D	2 Distance
Q	DTH services were first proposed in India in 1996
A	1998

B	1997
C	1996
D	1995
Q	VSAT system operates in _____ configuration
A	Mesh
B	Ring
C	Delta
D	Star
Q	What is the time duration of a bit if data is transmitted at 270.833 kbps in the channel?
A	270.833 s
B	3 μ s
C	3.692 μ s
D	3.692 s
Q	SCPC systems are widely used on lightly loaded routes, this type of service being referred to as a _____.
A	thin route service.
B	thick route service.
C	busy route service.
D	empty route service.
Q	_____ is a measure of the fraction of frame time used for the transmission of traffic.
A	The frame efficiency
B	The Traffic density
C	The spectrum efficiency
D	The traffic bits
Q	A frame format of TDMA system includes.
A	reference burst, preamble and traffic data.
B	reference burst, guard time , preamble and traffic data.
C	guard time , preamble and traffic data.
D	reference burst, guard time and preamble.
Q	Calculate frame efficiency of TDMA system for overhead bits are 6144 symbols and total bits in frame is 120832.

- A 95%
- B 94.90%
- C 96.40%
- D 93%
- Q 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 It is a measure of the fraction of frame time and information time used for the transmission of Traffic
- D It is a measure of the fraction of information time and guard time used for the transmission of Traffic
- Q A form of CDMA where a digital code is used to continually change the frequency of the carrier.
- A Spread Spectrum
- B Frequency Hopping
- C Store and Forward
- D SPADE
- Q Guard bands lead to a waste of capacity is the main drawback of
- A TDMA
- B FDMA
- C CDMA
- D Random Access
- Q The frequency hopping system uses _____ modulation scheme.
- A FSK
- B BPSK
- C MFSK
- D MPSK
- Q CDMA rejects
- A Narrow band interference
- B Wide band interference
- C Narrow & Wide band interference

- D None of the mentioned
- Q Calculate the miss probability of unique word detection for the following values .
N=40, E= 5 and P=10⁻³
- A Pmiss=3.4*10⁻¹²
- B Pmiss=3.7*10⁻¹²
- C Pmiss=3.8*10⁻¹²
- D Pmiss=3.3*10⁻¹²
- Q _____ synchronization overhead is required in TDMA due to _____ transmission.
- A High, burst
- B High, continuous
- C Low, burst
- D No, burst
- Q Frequency division multiple access (FDMA) assigns _____ channels to _____ users.
- A Individual, individual
- B Many, individual
- C Individual, many
- D Many, many
- Q _____ is based on coding theory and uses sequences of numbers called chips.
- A FDMA
- B TDMA
- C CDMA
- D SDMA
- Q Frequency hopping involves a periodic change of transmission _____
- A Signal
- B Frequency
- C Phase
- D Amplitude