Subject Name: Satellite Communication and Networking
Subject Code:2173207

Faculty: Shefa Shah

Sr. No	CHAPTER NO- 1 : Introduction of Satellite Communication :	Marks
	TOPIC:1 Introduction	
	DESCRIPTIVE QUESTIONS	
1	What are the advantages of Satellite Communication?**(Nov-2017)(Nov-2019) [LJIET]**	**03/04**
2	Describe briefly the main advantages of satellite communication and discuss the applications of satellite communication.**(May-2016) (Nov-2016) (New Nov-2017) [LJIET]**	**07**
3	Explain different Satellite services.(**Dec-2013)(Nov-2014)(OLD Apr-2017) [LJIET]**	**07**
4	What is satellite communication? Draw and explain the block diagram of satellite communication in detail. (**May-2014)(OLD Apr-2017) (New Nov-2017) (Nov-2017)(Nov-2018) [LJIET]**	**07/04**
5	Which features are offered by Satellites that are not readily available with other means of communications?**(OLD Nov-2016) [LJIET]**	**02**
6	Describe the main features and services offered by the orbcomm satellite system. **(Nov-2016) [LJIET]**	**07**
7	Give Comparison of Network Transmission technologies. **[LJIET]**	**07**
8	Write a Short on Orbital and Spacecraft Problems. **[LJIET]**	**07**
9	Write a Short note on Growth of satellite communication. **[LJIET]**	**07**
	CHAPTER NO- 2 : Orbits and Launching Methods:	
	TOPIC:1 Introduction	
	DESCRIPTIVE QUESTIONS	
1	What are kepler's three laws of planetary motion? Give the mathematical formulation of kepler's third law of planetary motion.**(Dec-2012) (Nov-2016) (Nov-2018) [LJIET]**	**07**
2	With Neat Sketch, Explain Kepler's First Law **[LJIET]**	**03**
3	State and Explain Kepler's Second Law **[LJIET]**	**03**
4	Explain Kepler's Third Law with necessary mathematical equation**(Nov-2019) [LJIET]**	**07**
5	Explain three laws of Kepler's for planetary motion in detail.**(Nov-2011)(May-2016)(OLD Apr-2017)(New Nov-2017) (Nov-2017) [LJIET]**	**07**
6	Explain Kepler's first and second laws for planetary motion.**(OLD Nov-2016) (New Nov-2016) [LJIET]**	**03**
	TOPIC:2 Orbital Parameter	
	DESCRIPTIVE QUESTIONS	
1.	Describe the earth's oblateness, sun and moon's effects on artificial satellite's orbit?**(Dec-2012) (May-2015) (Nov-2016)(Nov-2017) (Nov-2019) [LJIET]**	**07/04**
2	List the orbital elements and explain each of them in detail. Also give their significance in orbital maintenance.**(May-2012) (May-2015) [LJIET]**	**07**
3	Explain the Keplerian element set.(**Dec-2013) [LJIET]** **OR** List orbital Elements and explain each of them in detail. **(Nov-2017) (Nov-2019) [LJIET]**	**07** **04/03**

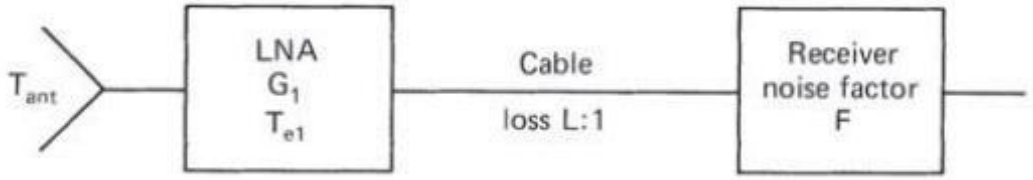
4	Explain Elliptical orbits and Molniya orbit with their uses.(**Dec-2012) [LJIET]**	**07**
5	State any three reasons that cause Orbital Perturbations. Identify locations called Satellite graveyards in the orbit. Explain the response of the satellite at such locations.(**Dec-2015) [LJIET]**	**07**
6	Explain orbital elements that define earth-orbiting artificial satellites. Also discuss the effects of the earth's oblateness.**(OLD Nov-2016) [LJIET]**	**07**
7	Write a Short note on Atmospheric Drag **[LJIET]**	**07**
	EXAMPLE	
1	A satellite is in an elliptical orbit with a perigee of 1000 km and an apogee of 4000 km. using mean earth radius of 6378.14 km, find the period of the orbit in hours, minutes, and seconds, and the eccentricity of the orbit. **(Dec-2012)(May-2015) (OLD Nov-2016) (Nov-2016) (Nov-2017) [LJIET]**	**07**
2	Calculate the radius of a circular orbit for which the period is one day.**(Nov-2014) (OLD Apr-2017) (New May-2017)(Nov-2019) [LJIET]**	**07**
3	State three laws of Kepler's planetary motion. A satellite in an elliptical orbit around the earth has an apogee of 39,152 km and a perigee of 500 km. What is the orbital period of the satellite? Average earth radius is 6,378.137 km.(**Dec-2015) [LJIET]**	**07**
4	A satellite in an elliptical orbit around the earth has an apogee of 39,152 km and a perigee of 500 km. What is the orbital period of the satellite? Average earth radius is 6,378.137 km. **(Nov-2018) [LJIET]**	**07**
	CHAPTER NO- 3 : The Geostationary Orbit:	
	TOPIC:1 Geostationary Orbit	
	DESCRIPTIVE QUESTIONS	
1	Explain elevation angle and azimuth angle calculation with proper derivations.**(New Nov-2016)(Nov-2018)[LJIET]**	**07/04**
2	Give Comparison of LEO, MEO and GEO satellite orbits and gives application also.**(May-2012) [LJIET]**	**07**
3	List the parameter that effect the selection of satellite launch vehicle.**(May-2015) [LJIET]**	**07**
4	List Five major types of orbits and explain any two of them in detail.**(May-2012) [LJIET]** **OR** What are the different types of Orbits used in Satellite Communication? Explain any one.**(Nov-2011)(OLD Apr-2017) (Nov-2017) [LJIET]**	**07/03**
5	Explain briefly: Sun synchronous orbit, Elliptical orbit, and Inclined orbit.**(May-2016) (Nov-2016) [LJIET]**	**07**
6	Give all the steps to launch the satellite vehicles for geostationary orbits and explain it with required figure and equations.**(May-2012) [LJIET]**	**07**
7	Write Short notes on Operational Non-Geostationary Satellite Orbit (NGSO) Constellation design.**(Nov-2011) [LJIET]**	**07**
8	Explain Orbit Consideration with respect to Non-Geostationary Satellite Orbit (NGSO). **(Nov-2011)(Dec-2013(Nov-2014)) [LJIET]**	**07**
9	By using of equation and figure properly explain the look angle determination of satellite. **(May-2014) [LJIET]**	**07**
10	List the types of orbits used in the satellite and give its comparison with appropriate advantages and disadvantages.**(May-2014) [LJIET]** List the types of orbits used in the satellite and give its comparison.**(Nov-2018) [LJIET]**	**07/03**
11	Give and explain orbit, coverage and frequency consideration of non-geostationary satellite system. **(May-2014) [LJIET]**	**07**

12	Using a neat sketch, show and explain (1) Inclination angle (2) Eccentricity (3) Perigee (4) Apogee (5) Foci of an ellipse (6) Semi major axis and (7) Sub satellite point (**Dec-2015) [LJIET]**	**07**
13	What is the significance of Geosynchronous Transfer Orbit for correct orientation of the satellite? How can we position a satellite to higher altitudes from the LEO height with the help of GTOs? Explain any one method.(**Dec-2015) [LJIET]**	**07**
14	Write a short note on the solar eclipse of satellite and sun transit outage. (**Dec-2015) [LJIET]** Explain solar eclipse of satellite and sun transit outage. (**Nov-2018) [LJIET]**	**07/04**
15	With Necessary Equation and Diagram, Explain Limits of Visibility**(Nov-2018) [LJIET]**	**04**
16	Write a Short note on Polar Mount Antenna **[LJIET]**	**07**
17	Write a short note on: Satellite Launch Vehicles in India.**(May-2016)[LJIET]**	**07**
18	What do you mean by geostationary orbit?**(OLD Nov-2016)[LJIET]**	**02**
19	Describe the following terms of Earth orbiting satellites (1) Ascending node (2) line of apsides (3) Inclination (4) Apogee (5) True anomaly (6) Mean anomaly (7) Retrograde orbit**(New Nov-2016)(New Nov-2017) [LJIET]**	**07**
20	What is difference between polar orbit and geostationary orbit?**(OLD Apr-2017)[LJIET]**	**02**
21	Using a neat sketch, show and explain**(New May-2017)[LJIET]** (1) Circular orbit (2) Elliptical orbit (3) Equatorial orbit (4) Inclined orbit (5) Polar orbit (6) GEO orbit (7) Molniya orbit	**07**
22	Classify orbits based on their height and specify at least one application of each.**(New May-2017)[LJIET]**	**07**
23	Define :(1) Eccentricity (2) Perigee (3) Apogee**(Nov-2019)[LJIET]**	**03**
24	By using of equation and figure properly explain the look angle determination of satellite.**(Nov-2019)[LJIET]**	**07**
	EXAMPLE	
1	An earth station is located at latitude 30°S and longitude 130°E. Calculate the antenna-look angles for a satellite at 156°E. **(Nov-2014) (Nov-2016) [LJIET]**	**07**
2	Determine the visibility of a earth station situated at mean sea level at latitude of 48.42° north and longitude 89.26° west. Assume a minimum angle of elevation of 5°.**(May-2012) [LJIET]**	**07**
3	An earth station situated in the Bangalore needs to calculate the Look angles to a geostationary satellite in the Indian ocean operated at INSAT. The details of the earth station site and the satellite are as follows: Earth station latitude and Longitude are 52.0 ^{0} N and 0 ^{0} Satellite longitudes (sub satellite point) is 66. 0 ^{0} E**(Nov-2011)(May-2015) [LJIET]**	**07**
4	Calculate the radius of a geostationary satellite. (**Dec-2013) [LJIET]**	**07**
5	An earth station is located at latitude 30°S and longitude 130°E. Calculate the antenna-look angles for a satellite at 156°E. **[LJIET]**	**07**
6	Determine the angle of tilt required for a polar mount used with an earth station at latitude 49° north. Assume a spherical earth of mean radius 6371 km, and ignore earth-station altitude. **(Nov-2014) [LJIET]**	**07**
7	Define Elevation and Azimuthal angles of a satellite. Look angles for the Earth station is at latitude	**07**

	52°N and 0° E longitude at London, England, Dockyard region. The look angle for the satellite is at latitude 0°N and 66° E longitude at Geostationary INTELSAT, IOR primary. Find the central angle, the elevation angle, the intermediate angle and the azimuthal angle. (**Dec-2015) [LJIET]**	
8	An earth station is located at latitude 12° S and longitude 52° W. Calculate the antenna look angles for a satellite at 70° W.**(OLD Nov-2016) (Nov-2019) [LJIET]**	**07**
9	A geostationary Satellite is located at 90° W. Calculate azimuth angle for An earth station antenna is located at latitude 35°N and longitude 100°W. **(Nov-2017) [LJIET]**	**07**
	CHAPTER NO- 4 : Radio Wave Propagation :	
	TOPIC:1 Radio Wave Propagation	
	DESCRIPTIVE QUESTIONS	
1	What is meant by rain attenuation? Derive an equation for the same **(Nov-2016)(New Nov-2017) (Nov-2017)(Nov-2018) [LJIET]**	**07/04**
2	Explain atmospheric losses in detail. **(Nov-2016)(Nov-2017) [LJIET]**	**07/04**
3	Explain Atmospheric Losses and Ionosphere Effects for radio wave propagation.**(New Nov-2016)(New Nov-2017) [LJIET]**	**07**
4	How the prediction of rain attenuation is possible? Also state the calculation steps of Long Term Statistics for NGSO System.**(Nov-2011) [LJIET]**	**07**
5	List the propagation effects that are not associated with hydrometeors. Explain any two of them in details.**(May-2012)** (**Dec-2012)(May-2016)(OLD Nov-2016) [LJIET]**	**07**
6	What parameters apart from rain affect the satellite system? Explain.(**Dec-2015) [LJIET]**	**07**
7	What are Atmospheric Losses ? **(Nov-2019) [LJIET]**	**04**
8	Explain the phenomenon of scintillation.**(Nov-2019) [LJIET]**	**03**
9	Explain what is meant by effective path length in connection with rain attenuation.**(Nov-2019) [LJIET]**	**07**
	CHAPTER NO- 5 : Polarization :	
	TOPIC:1 Polarization	
	DESCRIPTIVE QUESTIONS	
1	What is Polarization Discrimination? **(Nov-2016) [LJIET]**	**07**
2	Write a note on Rain depolarization. **(Nov-2016)(Nov-2017) [LJIET]**	**07/04**
3	Explain how depolarization is caused by ionosphere, rain and ice.**(New Nov-2016)(New Nov-2017) [LJIET]**	**07**
4	What is XPD? Properly explain. How XPD are predicted?Also Draw and Explain properly The Canting Angle and Tilt Angle with required equations.**(May-2012)** (**Dec-2013) (May-2015) (OLD Nov-2016) (Nov-2016) [LJIET]** What is XPD andHow XPD are predicted? **(Nov-2018) [LJIET]**	**07/03**
5	Explain Antenna Polarization **[LJIET]**	**04**
6	Write a short note on Ice Depolarization **[LJIET]**	**04**
7	Write a Short note on Polarization of Satellite Signals**(Nov-2018) [LJIET]**	**04**
8	What is Cross Polarization Discrimination?**(Nov-2014)(OLD Apr-2017) (New Nov-2017) (Nov-2017) [LJIET]** Explain Cross Polarization Discrimination**(Nov-2019) [LJIET]**	**07/03** **03**
9	Differentiate XPD and Ploarisation Isolation. **(Nov-2017)(Nov-2019) [LJIET]**	**03/04**
	EXAMPLE	
1.	A geostationary satellite is stationed at 105° W and transmits a vertically polarized wave. Determine the angle of polarization at an earth station at latitude 18° N longitude 73° W. **[LJIET]**	**07**

	CHAPTER NO- 6 : The Space Segment :	
	TOPIC:1 The Space Segment	
	DESCRIPTIVE QUESTIONS	
1	Draw and explain the block diagram of satellite transponder in detail.**(May-2012)(Dec-2013) (May-2015) (Nov-2016)(Nov-2017)(Nov-2019) [LJIET]**	**07/04**
2	What is the purpose of Telemetry, Tracking, Command in satellite communication? Explain in detail.**(Nov-2011)(May-2015)(May-2016)(OLDNov-2016) (New Nov-2016) (Nov-2016)(Nov-2017) [LJIET]**	**07/07**
3	Write a short note on transponder. **(OLD Nov-2016) (New Nov-2016)(New Nov-2017) [LJIET]**	**04**
4	Explain attitude control system.**(Dec-2012) (Nov-2017) [LJIET]** Write a short note on attitude control system. **(Nov-2019) [LJIET]**	**07/03** **04**
5	Explain what is meant by satellite attitude and briefly describe two forms of attitude Control. (**Dec-2013) [LJIET]**	**07**
6	Draw and explain the TT&C.(**Dec-2013)(Nov-2014)(OLD Apr-2017) (New Nov-2017) (Nov-2019) [LJIET]**	**07**
7	Explain the block diagram of Satellite Transponder. Also explain the frequency reuse technique for Transponder.**(Nov-2014)(OLD Apr-2017)(Nov-2018) [LJIET]**	**07**
8	Write differences between: (i) Attitude control and orbital control (ii) East west and north south station keeping maneuvers.**(Nov-2014)(OLD Apr-2017)(New Nov-2017) [LJIET]**	**07**
9	List various types of control required to maintain the satellite in space and explain attitude and orbital control system in detail.**(May-2012)(May-2015) [LJIET]** List various types of control required to maintain the satellite in space and Explain any one of them in detail.**(Nov-2018)[LJIET]**	**07**
10	What kind of forces causes the state of “Free Fall” of a satellite body so that it can continue being in motion once it is placed in the orbit? Explain in details. (**Dec-2015)(New May-2017) [LJIET]**	**07**
11	Write a short note on TTC&M.(**Dec-2015) [LJIET]** Write a short note on Telemetry, Tracking, Command in satellite communication?(**Nov-2018) [LJIET]**	**07/04**
12	Explain with block diagram: (i) Single conversion transponder (ii) Double conversion transponder **(May-2016)[LJIET]**	**07**
13	Briefly describe the three-axis method of satellite stabilization.**(OLD Nov-2016) [LJIET]** Discuss the three-axis method of satellite stabilization.**(Nov-2018) [LJIET]**	**03/04**
14	Write a Short note on wideband receiver in satellite communication **[LJIET]**	**04**
15	Explain working of power amplifier and input de-multiplexer in satellite communication **[LJIET]**	**07**
16	What is the significance of a Transponder in Satellite? Explain in details. **(New May-2017) [LJIET]**	**07**
17	How does a 3 axis stabilized satellite operate? Explain how attitude control is done. **(New May-2017) [LJIET]**	**07**
18	What is spinning satellite stabilization? **(New Nov-2017)[LJIET]**	**04**
	CHAPTER NO- 7 : The Earth Segment :	
	TOPIC:1 The Earth Segment	
	DESCRIPTIVE QUESTIONS	
1	Draw a block diagram for transmit receive type earth station. **(Nov-2016)(Nov-2017)(Nov-2019) [LJIET]**	**07/04**
2	Write a short note on Receive-Only Home TV Systems.**(New Nov-2016) (Nov-2018) [LJIET]**	**07/03**

3	Write short notes on Satellite Antennas. Support your answer by explaining main types of antennas are used in satellites**(Nov-2011)(Dec-2012)**(**May-2014)(May-2016) (New May-2017) [LJIET]** Write short notes on Satellite Antennas.**(Nov-2018) [LJIET]**	**07/03**
4	Write a short note on the outdoor unit for analog (FM) TV **(Nov-2017) [LJIET]**	**03**
5	Write a short note on indoor unit for analog (FM) TV **[LJIET]**	**07**
6	Write a short note on Master Antenna TV Systems **[LJIET]**	**07**
7	Write a short note on Community Antenna TV Systems **(New Nov-2017) [LJIET]**	**04**
	CHAPTER NO- 8 : The Space Link :	
	TOPIC:1 The Space Link	
	DESCRIPTIVE QUESTIONS	
1	Explain how to compute uplink and downlink C/N ratio for a typical satellite link.(**Dec-2013)(Nov-2014) (Nov-2016) (OLD Apr-2017)(New Nov-2017) (Nov-2017)(Nov-2018) [LJIET]**	**07**
2	List the types of parameters effective in downlink of satellite .Also give its significance and arrange them in the equation for downlink. (**May-2014) (May-2015) (Nov-2016) [LJIET]**	**07**
3	Derive Friis transmission equation for received power in any radio link.**(New Nov-2016) (Nov-2018) [LJIET]**	**04/03**
4	Discuss the various design issues related with uplink design and give the Expression C/N ratio for the same.**(New Nov-2016) [LJIET]**	**07**
5	What is uplink? Draw and Explain Uplink block-diagram. Also explain all the steps to followed for Uplink power budget preparation.**(May-2012) (Nov-2017) [LJIET]** What is uplink? Draw and explain block diagram.(**Nov-2019) [LJIET]** Explain all the steps to follow for Uplink power budget preparation.(**Nov-2019) [LJIET]**	**07/04** **03** **04**
6	List the step for design procedure for satellite communication link.(**Dec-2012) [LJIET]**	**07**
7	How we can provide C/N link design. Also combine C/N with C/I values in satellite link.(**May-2014) [LJIET]**	**07**
8	Define Downlink. Draw a pictorial representation of a Downlink. Show the power budget calculations for a downlink path. (**Dec-2015) [LJIET]**	**07**
9	Explain basic transmission line theory and derive equation of power received in dBW. (In terms of EIRP, Antenna gain and path loss.**(May-2016) [LJIET]**	**07**
10	Explain the design methodology for a one-way satellite communication link with the help of one example.**(May-2016) [LJIET]**	**07**
11	Write a short note on Feeder Losses **[LJIET]**	**04**
12	Discuss Antenna Misalignment Losses**(Nov-2018) [LJIET]**	**03**
13	Write a short note on Fixed Atmospheric Losses And Ionospheric Losses **[LJIET]**	**07**
14	Write a Short note on Input Back-off and Output Back-off **[LJIET]** Define Input Back-off and Output Back-off **(Nov-2018) [LJIET]**	**07/03**
15	List the type of propagation effect that can provide impact on satellite- earth link and explain any two of them. **(May-2014)(May-2015) [LJIET]**	**07**
16	What is uplink? Draw and explain block diagram.(**Nov-2019) [LJIET]**	**03**
	EXAMPLE	
1	A C-band earth station has an antenna with a transmit gain of 54 dB. The transmitter output power is set to 100 W at a frequency of 6.100 GHz. The signal is received by a satellite at a distance of 37,500 km by an antenna with a gain of 26 dB. The signal is then routed to a transponder with a noise temperature of 500 K, a bandwidth of 36 MHz, and a gain of 110 dB. Calculate (a) path loss at 6.1 GHz. (b) power at the output port of the satellite antenna, in dBW.	**07**

	(c) noise power at the transponder input (d) C/N ratio, in dB, in the transponder (e) carrier power, in dBW and in watts, at the transponder output.**(New Nov-2016) [LJIET]**	
2	What is Free space loss? The range between a ground station and a satellite is 42,000 km. Calculate the free-space loss at a frequency of 6 GHz.**(New Nov-2016) [LJIET]**	**03**
3	A earth station have equivalent noise temperature of 200° K, noise bandwidth of 18 MHz, antenna gain of 50dB and carrier frequency of 12 GHz Determine, Gain to Equivalent Noise temperature ratio, Noise density, and Total Noise Power. **(May-2012) (May-2015) [LJIET]**	**07**
4	The uplink C/N0 ratio is 88dBHz and downlink value is 78dBHz. Calculate overall C/N0. **(May-2012)(May-2015) (Nov-2017) (Nov-2017)(Nov-2019) [LJIET]**	**07/03/04**
5	A satellite at a distance of 40,000 km from a point on the earth's surface radiates a power of 10 W from an antenna with a gain of 17dB in the direction of the observer. Find the flux density at the receiver point, and the power received by an antenna at this point with an effective area of 10 m^2 (**Dec-2012)[LJIET]**	**07**
6	In a satellite link, thermal noise in an earth station results in a ratio of 25.0 dB. A signal is received from a transponder with a carrier to noise ratio of 20.0 dB. Find the value of overall (C/N)o at the earth station.(**Dec-2013) [LJIET]**	**07**
7	Calculate the gain of a 3-m paraboloidal antenna with an aperture efficiency of 0.55 operating at a frequency of 12 GHz.(**Dec-2013) [LJIET]**	**07**
8	An antenna has a noise temperature of 35 K and is matched into a receiver which has a noise temperature of 100 K. Calculate (i) the noise power density and (ii) the noise power for a bandwidth of 36 MHz. **(Nov-2014) [LJIET]**	**07**
9	A geostationary satellite carries a C-band transponder which transmits 15 watts into an antenna with an on-axis gain of 32 dB. An earth station is in the center of the antenna beam from the satellite, at a distance of 38,500 km. For a frequency of 4.2 GHz, calculate the incident flux density at the earth station in watts per square meter and in dB W/m2. The earth station has an antenna with a circular aperture 3 m in diameter and an aperture efficiency of 62%. Calculate the received power level in watts and in dB W at the antenna output port. Calculate the on-axis gain of the antenna in decibels. Calculate the free space path loss between the satellite and the earth station. Calculate the power received, Pr, at the earth station. (**Dec-2015) [LJIET]**	**07**
10	Calculate the overall [C/N0] for a satellite circuit having the following parameters:**(OLD Nov-2016) [LJIET]** Uplink, decilogs — Downlink, decilogs [EIRP] 54 34 [G/T] 0 17 [FSL] 200 198 [RFL] 2 2 [AA] 0.5 0.5 [AML] 0.5 0.5	**07**
11	Find the carrier-to-noise density ratio at the satellite input for an uplink, which has the following parameters: operating frequency 6 GHz, saturation flux density -95 dBW/m^2; input back-off 11 dB; satellite [G/T] -7 dBK-1, [RFL] 0.5 dB. **(OLD Nov-2016) [LJIET]**	**07**
12	For the system shown in figure below, the receiver noise figure is 12 dB, the cable loss is 5 dB, the LNA gain is 50 dB, and the noise temperature 150 K. The antenna noise temperature is 35 K. Calculate the noise temperature referred to the input. Why LNA must be placed ahead of the cable? **(OLD Nov-2016) [LJIET]** 	**07**

13	Calculate overall C/N_0 for uplink and downlink C/N_0 ratio for 46 dB. **(Nov-2018) [LJIET]**	**04**
	CHAPTER NO- 9 : Satellite Access :	
	TOPIC:1 The Multiple Access Techniques	
	DESCRIPTIVE QUESTIONS	
1	Give the list of all multiple access system used for satellite communication. Explain any one of them in detail and give comparison of any three.**(May-2012)(Dec-2013) (May-2014)(May-2015) (Nov-2016)(New Nov-2017) [LJIET]**	**07**
2	Compare FDMA, TDMA and CDMA techniques.**(New Nov-2016) (New May-2017) [LJIET] (Nov-2018) [LJIET]**	**07**
3	What do you mean by multiple access technique? Explain Time Division Multiple Access in detail.**(Nov-2011) (Nov-2017) (New Nov-2016) [LJIET]**	**07/04**
4	Write short notes on Demand Access Multiple Access system.**(Nov-2011)(Dec-2012) (OLD Nov-2016) [LJIET]**	**07**
5	Write a Short note on a Pre-assigned FDMA **[LJIET]**	**07**
6	Write a Short note on a Demand assigned FDMA **[LJIET]**	
7	Write a short note on Spade System**(Nov-2014) (OLD Apr-2017) (New Nov-2017) [LJIET]**	**07**
8	List the advantage and disadvantage of FDMA,TDMA and CDMA multiple access techniques **(Dec-2012) [LJIET]**	**07**
9	Write a Short note on a Pre-assigned TDMA and Demand assigned TDMA **[LJIET]**	**07**
10	With the help of equation and block diagram Properly explain the Code Division multiple Access in detail.**(May-2014) [LJIET]**	**07**
11	What are the differences between multiplexing and multiple access techniques? Explain briefly Code division multiple access. **(May-2016) [LJIET]**	**07**
12	Explain Frequency division multiple access technique for satellite links.**(May-2016) [LJIET]**	**07**
13	Illustrate basic TDMA concept and explain satellite switched TDMA with onboard processing. **(Nov-2016) [LJIET]**	**07**
14	List advantage and disadvantage of CDMA multiple access technique.**(Nov-2017)[LJIET]**	**04**
15	What is difference between single access and multiple access?**(New Nov-2017)[LJIET]**	**03**
16	Compare Pre-assigned TDMA and Demand assigned FDMA **(New Nov-2017) [LJIET]**	**04**
17	List advantages and disadvantages of TDMA.**(Nov-2018)[LJIET]**	**03**
18	List advantages and disadvantages of FDMA multiple access technique.**(Nov-2019)[LJIET]**	**03**
19	Explain block diagram of Code Division multiple Access in detail.**(Nov-2019)[LJIET]**	**07**
	EXAMPLE	
1	In a TDMA system transmission rate is 60 Mbps, Voice channel bit rate is 64 Mbps Number of burst/ frame are 10, number of bits in a preamble are 150. Frame time 750 µsec. Find Noise channel capacity. **(May-2012) [LJIET]**	**07**
2	A downlink [C/N0] of 87.3 dB Hz is calculated for a TDMA circuit that uses QPSK modulation. A BER of 10^5 is required. Calculate the maximum transmission rate. Calculate also the IF bandwidth required assuming a roll-off factor of 0.2. **[LJIET]**	**07**
	CHAPTER NO- 10 : Satellite in Networks :	
	TOPIC:1 Satellite Networks	
	DESCRIPTIVE QUESTIONS	
1	What are the main technical parameters used in measuring ATM performance ?**(Nov-2016) (Nov-2017) [LJIET]**	**07/03**
2	Explain asynchronous transfer mode in detail. **(Nov-2016)(Nov-2017) (Nov-2019) [LJIET]**	**07**

3	Draw and explain the satellite mobile network in detail. **[LJIET]**	**07**
4	Write a short note on ATM in Satellite Communication.**(Nov-2018) [LJIET]**	**07**
5	Write a short note on internet and internet layers **[LJIET]**	**07**
6	Write a short note on TCP Link **[LJIET]**	**07**
7	Write a short note on Satellite Link and TCP **(Nov-2018) [LJIET]**	**07**
8	Write a short note on RFC-2488 **[LJIET]**	**07**
9	Describe briefly the difference between ATM digital cross connect switch and ATM switch.**(Nov-2019) [LJIET]**	**03**