Code No: **R42043** **R10** **Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

SATELLITE COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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1	a)	List the applications of satellites.	[8]
	b)	Discuss the satellite development in India.	[7]
2	a)	Discuss the procedure for launches and launch vehicles for spacecrafts.	[8]
	b)	Write notes on Orbital effects in communication systems performance.	[7]
3	a)	Discuss in detail Attitude and orbit control system for a spacecraft.	[8]
	b)	Explain the communication sub-system for the spacecraft.	[7]
4	a)	Derive the power received from the satellite at the earth station from the basic transmission theory.	[8]
	b)	Write short notes on design of satellite links for specified C/N.	[7]
5	a)	Compare FDMA, TDMA and CDMA techniques.	[8]
	b)	Write notes on Satellite Switched TDMA Onboard processing.	[7]
6	a)	Draw and explain the block diagram of transmitter for the earth station.	[8]
	b)	Write short notes on the Low noise amplifier used in the receiver of an earth station.	[7]
7	a)	What is a geo stationary satellite and list the system considerations for the same.	[8]
	b)	Write notes on Delay & Throughput considerations for a geo stationary satellite.	[7]
8	a)	Explain in detail GPS Position Location principles.	[8]
	b)	Write notes on Differential GPS.	[7]

Code No: **R42043** **R10** **Set No. 2**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

SATELLITE COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
*****

1	a)	Discuss in detail about the development of Satellite communication in the world scenario.	[8]
	b)	The orbital period of a satellite is 650 minutes. Determine the semi major axis of the elliptical orbit.	[7]
2	a)	Explain the various Orbital perturbations for a satellite.	[8]
	b)	Discuss in detail Orbital effects in communication systems performance.	[7]
3	a)	Explain the Tracking, telemetry and Command sub system of a spacecraft.	[8]
	b)	Write short notes on the power systems used in the spacecraft.	[7]
4	a)	What is G/T ratio and explain its significance for the quality of communication.	[8]
	b)	Write short notes on Design of down links and Up link of a spacecraft.	[7]
5	a)	Explain using neat diagrams about the Frequency division multiple access (FDMA) system.	[8]
	b)	Compare the TDMA and CDMA systems.	[7]
6	a)	Draw and explain the block diagram receiver for the earth station.	[8]
	b)	Write short notes on the various antennas used for the spacecraft.	[7]
7	a)	What are the coverage and frequency considerations for a Geo stationary satellite.	[8]
	b)	Prove that the distance between the center of the earth to the Geo synchronous Satellite is 42,242 KM.	[7]
8	a)	Explain in detail about the GPS receiver operation.	[8]
	b)	Write short notes on GPS Receivers and codes.	[7]

Code No: **R42043** **R10** **Set No. 3**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

SATELLITE COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

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1 a) List the Orbital elements. Explain the effect of eclipse on the satellite with neat diagrams. [8]
b) The apogee and perigee of an elliptical satellite orbits are 3000 Km and 200 Km. Determine the eccentricity, semi-major axis and semi-minor axis. [7]

2 a) Explain the mechanism of launching a satellite. [8]
b) A satellite is moving in an elliptical transfer orbit with apogee and peigee at a distance of 35000 km and 500 km. If the radius of the earth is 6360 km, determine the velocity of a satellite at any point on its orbit. [7]

3 a) Explain the communication subsystems of a spacecraft using a block diagram. [8]
b) Write short notes on Equipment reliability and Space qualification. [7]

4 a) Explain the concept of system noise temperature in satellite communication using block diagram. [8]
b) Define G/ T ratio and give its importance in satellite communication. [7]

5 a) Compare between FDMA and CDMA systems. [8]
b) Explain in detail about the Time division Multiple Access (TDMA) Frame structure. [7]

6 a) List the earth station design requirements. [8]
b) Write short notes on earth station antennas. [7]

7 a) Define a Geostationary satellite and explain the frequency considerations for the same. [8]
b) Discuss the Delay & Throughput considerations for a Geo stationary satellite. [7]

8 a) Write short notes on GPS receiver operation. [8]
b) Explain the working of a Differential GPS. [7]

Code No: **R42043** **R10** **Set No. 4**

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

SATELLITE COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
*****

1	a)	Define Keplers laws and list the orbital elements of a satellite.	[8]
	b)	Calculate the velocity of an artificial satellite orbiting the earth in a circular orbit at an altitude of 200 Km above the earth's surface.	[7]
2	a)	Write notes on Orbital effects in communication systems performance.	[8]
	b)	What are Orbital perturbations in satellite communication.	[7]
3	a)	Explain the Attitude and orbit control system for a spacecraft.	[8]
	b)	Explain the working of telemetry, tracking, Command and monitoring sub system of a spacecraft.	[7]
4	a)	Derive the power received from the satellite at the earth station from the basic transmission theory.	[8]
	b)	Write short notes on Design of satellite links for specified C/N.	[7]
5	a)	Compare FDMA, TDMA and CDMA techniques.	[8]
	b)	Explain in detail about the Time division Multiple Access (TDMA) Frame structure.	[7]
6	a)	Draw and explain the block diagram of transmitter for the earth station.	[8]
	b)	Write short notes on earth station antennas.	[7]
7	a)	Define a Geostationary satellite and explain the frequency considerations for the same.	[8]
	b)	Write notes on Delay & Throughput considerations for a geo stationary satellite.	[7]
8	a)	Write short notes on GPS receiver operation.	[8]
	b)	Write notes on GPS Navigation Message and GPS signal levels.	[7]