

Exam.Code:0930

Sub. Code: 6610

2014

B.E. (Electronics and Communication Engineering)

Sixth Semester

EC-605: Satellite Communications

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.

x-x-x

Q.1a)	What is the difference between active and passive satellites?	(2×5)
b)	State Kepler's third Law.	
c)	Discuss the significance of azimuth and elevation in satellite system.	
d)	Define the terms Apogee and perigee.	
e)	Find the velocity of a satellite in the orbit at an altitude of 35,786 km. Assume the average radius of earth as 6370km.	
Section A		
Q.2a)	Why redundancy is necessary for the satellite subsystem? Explain.	(5)
b)	The noise temperature at the input of a satellite receiver is 340K. Input to the receiver is an FM modulated video signal occupying a bandwidth of 20 MHz. Calculate the noise power at the receiver input in dBW.	(5)
Q.3a)	What is Link Budget? Explain Uplink Budget of a Satellite with neat diagram?	(5)
b)	With the help of a diagram, explain the functioning of transponders in communication Subsystem	(5)
Q.4a)	What are the advantages and disadvantages of satellites in GEO?	(5)
b)	What are the effects of orbital inclination? Explain.	(5)
Section B		
Q.5a)	How do cross polarization components affect a digital communication system? What causes atmospheric absorption and how does it vary with frequency?	(5)
b)	The elevation angle for a geosatellite at an earth station is 40 degree. The earth station is situated at an altitude of 500m above the sea level. The stratified height of rain is 3.5 km. Find the path length through rain. Also find the path attenuation for the specific attenuation of 1.8 dB/km.	(5)
Q.6a)	Discuss the various steps of code and carrier phase measurements.	(5)
b)	Give a brief note on position estimation with pseudo range measurements.	(5)
Q.7	Write short notes on the following: a) Attitude control subsystem b) GPS constellation	(10)

x-x-x