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1ˢᵗ Sem Regular/Back Examination – 2015-16
SATELLITE COMMUNICATION SYSTEM
SPECIALISATION:
Time: 3 Hours
Max marks: 70
Q.CODE:T1170
Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1   Answer the following questions: (2 x 10)

     a)   What is angle of inclination?

     b)   What is an TDMA? What are the advantages?

     c)   A satellite downlink at 12 GHz operates with a transmit power of 10 W and an antenna gain of 45dB. Calculate the EIRP in dBW.

     d)   Define Space division multiple access technique.

     e)   Distinguish geostationary and geosynchronous satellite.

     f)   Determine the symbol rate that can be carried in a 24 MHZ transponder. Assume a roll factor of 0.2.

     g)   Define true anamoly and eccentricity anamoly.

     h)   What are the different applications of satellite systems?

     i)   Compare LEO , GEO and MEO satellite.

     j)   What is a polar antenna? and What is declination?

Q2   a)   Consider a satellite transmitting 25W at a frequency of 4GHz via an antenna of 18dB gain. An earth station in the network uses an antenna of 12m diameter with an efficiency of 60%. Determine the gain of the earth station antenna, path loss, flux density at the earth station and power received at the output of the earth station antenna assuming the satellite earth station range to be 40, 000 km.   (5)

     b)   Discuss about frequency allocations for satellite services.   (5)

Q3	a)	An antenna has a noise temperature of 35k and it's matched into a receiver which has a noise temp of 100k. Calculate the noise power density & the noise power for a BW of 36MHZ.	(5)
	b)	Explain the geocentric equatorial and top centric co-ordinate system.	(5)

Q4		Discuss in detail about attitude control of a satellite.	(7+3=10)
		Calculate the radius of circular orbit for which the period is one day.	

Q5	a)	Discuss the principles of CDMA. Explain the application of CDMA in satellite communication system.	(5)
	b)	What are look angles and derive the expression for azimuth and elevation angle.	(5)

Q6		Draw the block diagram and Explain the System noise temperature.	(10)

Q7	a)	Explain the operation of FDMA down link analysis.	(5)
	b)	Explain how satellite positions are estimated using sub-satellite.	(5)

Q8		Writes short notes on any two	(5 x 2)
	a)	Satellite wide band receiver	
	b)	GPS system	
	c)	VSAT	
	d)	Sun transit outage	