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Reg. No.													

Question Paper Code	11778

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL/MAY 2023

Eighth Semester

Electronics and Communication Engineering

EC8094 - SATELLITE COMMUNICATION

(Regulations 2017)

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	State Kepler's third law of planetary motion.	2,K1,CO1
2.	Identify the basic factors affecting satellite position.	2,K1,CO1
3.	Identify the launching stages of satellite with an example.	2,K1,CO2
4.	State the basic requirements of an earth station antenna.	2,K1,CO2
5.	Differentiate split body stabilization with spin stabilization satellite.	2,K2,CO3
6.	Describe the need for thermal control in a satellite.	2,K2,CO3
7.	Define Carrier to noise ratio and the earth station parameters affecting it.	2,K1,CO4
8.	List the ionospheric effects on space link.	2,K1,CO4
9.	Mention the services of INSAT.	2,K1,CO6
10.	Identify the components used in DBS system.	2,K1,CO6

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	(i) State the significance of station keeping.	7,K1,CO1
		(ii) Define the term limits of visibility in satellite looking from the earth station.	6,K1,CO1
		OR	
	b)	Discuss the effects of non-spherical earth in orbital perturbations.	13,K1,CO1
12.	a)	(i) Investigate the Satellite launch vehicle design and its types.	8,K2,CO2
		(ii) Compose the launching procedure of satellite.	5,K2,CO2
		OR	
	b)	Explain the various elements used in the space segments of a satellite system and also the need and function of each element in the satellite system.	13,K2,CO2

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

13. a) Examine how the altitude and orbit control system is achieved through spin stabilization systems. Give necessary diagrams. *13,K2,CO3*

OR

b) (i) Explain the various methods of generating the power in satellites and also the importance of solar cells in satellite. *7,K2,CO3*

(ii) Compare the solar rails of spin stabilized and three axis stabilized satellites. *6,K2,CO3*

14. a) (i) Derive the expression for Equivalent Isotropic Radiated Power. *10,K2,CO4*

(ii) An uplink operates at 14 GHz, and the flux density required to saturate the transponder is 120 dB (W/m2). The free-space loss is 207 dB, and the other propagation losses amount to 2 dB. Calculate the earth-station [EIRP] required for saturation, assuming clear-sky conditions. *3,K2,CO4*

OR

b) Explain in detail about the link design without frequency reuse. *13,K2,CO4*

15. a) Evaluating the features and Architecture of GSM. *13,K2,CO6*

OR

b) Explain the basic techniques and network configurations of VSAT. State briefly where VSAT system find widest application. *13,K2,CO6*

PART - C (1 × 15 = 15 Marks)

16. a) Describe a basic CDMA system and explain Acquisition of a carrier in a CDMA system. *15,K2,CO5*

OR

b) Evaluate the techniques of compression and encryption used in satellite communication with general block diagram. *15,K2,CO5*