Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E /B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Fifth Semester

Electronics and Communication Engineering

CEC352 - Satellite Communication

Regulations - 2021

Duration : 3 Hrs *Maximum : 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	Recall Kepler's third law.	RE	1	2
2.	What is meant by sun transit outage?	RE	1	2
3.	How does the bandwidth of a transponder can be increased?	RE	2	2
4.	What ate the functions of telemetry, tracking and command subsystem.	RE	2	2
5.	Outline the parameters involved in determining quality and strength of received signal.	UN	3	2
6.	A satellite downlink at 12 GHz operates with a transmit power of 6W and an antenna gain of 48.2dB. Calculate the EIRP in dBW.	UN	3	2
7.	Summarize the advantages of CDMA in satellite communication.	UN	4	2
8.	What is the use of control bit in data stream?	RE	4	2
9.	Compare LEO and MEO systems.	UN	5	2
10.	Illustrate the difference between GPS and differential GPS.	UN	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)*

Q.No		*Questions*	*BLT*	*CO*	*Marks*
11.	a	Describe the theory and analysis in determining the look angles of the satellite	UN	1	13
		Or			
	b	Explain briefly on launching vehicles and the procedures employed for launching spacecraft in GEO orbits.	UN	1	13
12.	a	Analyze how attitude and orbit control system helps in controlling the satellite system with neat diagrams.	AN	2	13
		Or			
	b	Analyze the function of different blocks in generalized spacecraft TTC system.	AN	2	13
13.	a	Derive the expression for satellite link design and explain in detail.	UN	3	13
		Or			
	b	Outline how the signal propagations are affected during rainy season and also explain ionospheric effects in detail.	UN	3	13

14.	a	Analyze the expression for equivalent voice channel capacity of a TDMA system also draw the frame structure of TDMA.	AN	4	13
		Or			
	b	Analyze how encryption and compression of signals are carried out in communication satellite.	AN	4	13
15.	a	Analyze the function of each block in outdoor and indoor units of VSAT terminal.	AN	5	13
		Or			
	b	Analyze the impact of GSM and GPS technologies on enhancing mobility.	AN	5	13

*PART – C (Marks 1*15 = 15)*

Q.No		*Questions*	*BLT*	*CO*	*Marks*
16.	a	Explain how the performance of the system affects due to system noise. Derive the expression for system noise at the receiving earth station.	AP	3	15
		Or			
	b	A geostationary satellite transmits 5 W of power with an antenna having a gain of 28 dB. The downlink is operated at 4 GHz and the receive antenna is a dish with diameter of 3.6 m. Compute the EIRP transmitted and the power received by the receiving antenna. Assume the receiver antenna efficiency to be 0.7 and all the other losses to be 2 dB.	AP	3	8
		In a link budget calculation at 12Ghz the free space loss is 20dB, the antenna pointing loss is 1dB and atmospheric absorption is 2dB. The receiver [G/T] is 19.5dB/K and the receiver feeder loss is 1dB. The EIRP is 48dBw. Calculate the carrier to noise power spectral density ratio.	AP	3	7