

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025***Sixth 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)**

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Define apogee and perigee.	L1	1	2
2.	What are the types of launch vehicles?	L1	1	2
3.	Define Payload and transponder.	L1	2	2
4.	Why is thermal control necessary in a satellite?	L2	2	2
5.	What is EIRP of an antenna?	L1	3	2
6.	A receiving system has antenna noise temperature of 60K & its receiver noise figure 9dB. Find the system noise temperature if room temperature is 290K.	L3	3	2
7.	Define frame efficiency.	L1	4	2
8.	Distinguish between pre-assigned and demand-assigned TDMA satellite access.	L2	4	2
9.	List the services of INSAT.	L1	5	2
10.	Compare LEO and MEO systems.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a i State and Explain Kepler's three laws of motion with suitable diagrams.	L2	1	8
	ii A satellite is orbiting in the equatorial plane with a period from perigee to perigee of 12 h. Given that the Eccentricity is 0.002. Calculate the semi major axis. The earth's equatorial radius is 6378.1414km.	L3	1	8
	Or			
	b i Explain the features of typical satellite launch vehicles.	L2	1	8
	ii Determine the limits of visibility for an earth station situated at mean sea level, at a latitude 48.42° north and longitude 89.26° west. Assume a minimum angle of elevation 5°.	L3	1	8
12.	a Examine how the altitude and orbit control system is achieved through spin stabilization systems? Give necessary diagrams.	L4	2	16
	Or			
	b Analyze the working principles of telemetry, tracking, and control in satellite operations, using a suitable diagram to support your explanation.	L4	2	16

13.	a	Demonstrate how free space transmission losses, feeder losses, and misalignment losses impact space link performance, explaining each in detail.	L3	3	16
		Or			
	b	i Utilize the calculation of system noise temperature to prove C/N ratio is directly proportional to G/T ratio.	L3	3	8
		ii An antenna has a noise temperature of 35k & its matched into a receiver which has a noise temp of 100k. Calculate the noise power density & the noise power for a BW of 36MHZ.	L3	3	8
14.	a	Identify the ways in which demand assignment may be carried out in an FDMA network.	L3	4	16
		Or			
	b	Explain in detail about compression and encryption techniques used in satellite communication.	L3	4	16
15.	a	i Explain the types of INTELSAT satellites with respect to basic space craft characteristics and vehicle type.	L2	5	8
		ii Explain the concept of GSM.	L2	5	8
		Or			
	b	i Discuss in detail about GPS satellite services.	L2	5	8
		ii With block diagram explain the working principle of DBS-TV receiving system.	L2	5	8