Reg. No.												

Question Paper Code	12598

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

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.	Recall the basic factors affecting a satellite's position.	2	K1	CO1
2.	List out various orbital parameters.	2	K1	CO1
3.	Outline the block diagram of antenna subsystem.	2	K2	CO2
4.	Explain why noise temperature is a useful concept in communication receiver.	2	K2	CO2
5.	A satellite downlink at 10 GHz operates with a transmit power of 6 W and an antenna gain of 48.2 dB. Calculate the EIRP in dBW.	2	K2	CO3
6.	Define terrestrial interface.	2	K1	CO3
7.	State the basic requirements of earth station antenna.	2	K1	CO4
8.	Define Uplink fade margin.	2	K1	CO4
9.	Infer the advantages of TDMA over FDMA.	2	K2	CO5
10.	Write the two areas of satellite communication which are gaining major thrust from leading satellite industry and organization in recent years.	2	K2	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Explain how Keplers's and Newton's law are used to describe the orbit.	13	K2	CO1
		OR			
	b)	What are the different types of satellite orbits? Summarize their merits and demerits along with its perturbations.	13	K2	CO1
12.	a)	Explain about satellite launch vehicles and Illustrate the steps involved in launching a satellite.	13	K2	CO2
		OR			
	b)	With a neat block diagram explain the functional elements of a basic digital earth station and also the main elements of a satellite tracking system.	13	K2	CO2

13.	a)	Identify how the attitude and orbit control system (AOCS) is achieved through stabilization techniques. Give necessary diagrams.	*13*	*K2*	*CO3*
		OR			
	b)	Explain about Telemetry, Tracking and Command (TTC) subsystem in detail with neat diagrams.	*13*	*K2*	*CO3*
14.	a)	Inference the main features and services offered by Mobile Satellite Systems.	*13*	*K2*	*CO4*
		OR			
	b) i)	Explain the earth station transmitter and receiver with necessary block diagram.	*7*	*K4*	*CO4*
	ii)	Analyze the frequency reuse process and give the metrics of spread spectrum communication.	*6*	*K4*	*CO5*
15.	a)	Examine the principle behind spectrum spreading and dis spreading and how this is used to minimize interference in a CDMA system.	*13*	*K4*	*Co5*
		OR			
	b) i)	Write a detailed note on MPEG compression standards.	*6*	*K4*	*CO5*
	ii)	Describe the diagrammatic representation of SPADE system.	*4*	*K4*	*CO5*

PART - C (1 × 15 = 15 Marks)

16.	a) i)	Discuss in detail about GPS satellite services.	*8*	*K3*	*CO6*
	ii)	Describe the operation of typical VSAT system along with its application.	*7*	*K3*	*CO6*
		OR			
	b) i)	Identify the features of Direct to Home Broadcasting Satellite.	*8*	*K3*	*CO6*
	ii)	State the features to make satellite communication system advantageous in appropriate applications.	*7*	*K3*	*CO6*