С		Reg. No. :										
		Question Pape	er Co	de: 5	5941	6						
	B.E./B	.Tech. DEGREE EX	AMIN	ATIC	)N, N	OV	2019	)				
		Elec	ctive									
	El	ectronics and Comn	nunica	tion E	ngine	ering	3					
	15UEC916-SATELI	LITE COMMUNICAT	TION P	RINC	IPLES	S ANI	D AF	PLI	CAT	IONS	3	
		(Regulati	ion 201	15)								
Dur	ation: Three hours						Ν	laxiı	num	n: 10	0 Ma	rks
		Answer AL	L Que	stions								
		PART A - (5 2	x = 5	Mark	xs)							
1.	Rotation of a geosynchronous satellite means its								CO	1 <b>-</b> R		
	(a) Drift from stationary position			Wob	bling							
	(c) Three-axis stabilization			Three	e-dim	ensic	onals	stabi	lizat	ion		
2.	The transmitter-receiver combination in the satellite is known as a CO2- R											
	(a) Relay	(b) Relay	(c) [	Fransp	ponde	er		(	(d) D	uple	xer	
3.	Spread spectrum signal	s are used for									CO3	3- R
	(a) Ranging			(b) Determination of position								
	(c) Ranging & Determination of position			(d) None of the mentioned								
4.	The key electronic component in a communications satellite is the						CO4	I- R				
	(a) Telemetry			(b) Command and Control system								
	(c) On-board computer		(d)	Trans	spond	er						
5.	The INTELSAT-IV s antenna and two narro narrow-angle antenna a factor of	atellite launched in ower-angle antennas was stronger than the	n 1974 subter at from	4 had haing h earth	ł two 4.5°. n- cov	ear The rag	th c sigr e ant	cover nal f tenna	rage rom a by		CO	5- R

(a) 17.34/4.5 (b)  $17.34 \ge 4.5$  (c)  $(17.34/4.5)^2$  (d)  $(17.34/4.5)^4$ 

PART – B	$(5 \times 3 =$	15 Marks)
	(	/

6.	Mer	ntion the apogee and perigee height.	CO1- R			
7.	What is meant by transponder?			CO2- U		
8.	Wha	at are the limitations of FDMA-satellite access?	CO3- R			
9.	A sante	atellite downlink at 12GHz operates with a transmit power of 6W nna gain of 48.2 db. Calculate the EIRP in dBW.	and CO4	4- App		
10.	List	out the satellite mobile services.	CO5- R			
		PART – C (5 x 16= 80Marks)				
11.	(a)	<ul> <li>(i) Express the three Kepler's laws of planetary motion and list the various orbital parameters.</li> <li>(ii) Express the three is blacked on the second second</li></ul>	CO1- U	(10)		
		(11) Estimate the suitable equations for look angles and the range for geo stationary satellite.	COI- U	(6)		
		Or				
	(b)	(i) Explain the steps involved in launching the satellite into the geo stationary orbit.	CO1- U	(10)		
		<ul><li>(ii) Justify how altitude and orbit control is achieved from an earth station?</li></ul>	CO1- U	(6)		
12.	(a)	(i) Solve C/N ratio is directly proportional to G/T ration from the calculation of system noise temperature.	CO2- U	(8)		
		(ii) Describe briefly the factors governing the design of satellite links.	CO2- U	(8)		
		Or				
	(b)	(i) Explain the necessity of power amplifier in the transponder.	CO2- U	(8)		
		(ii) Describe briefly satellite uplink analysis.	CO2- U	(8)		
13.	(a)	(i) Express FDMA in detail and also enumerate the interference in FDMA.	CO3- U	(8)		
		(ii) Explain the operation of digital TASI in TDMA operation.	CO3- U	(8)		
		Or				
	(b)	(i) Illustrate the features of varies multiple access schemes deployed for satellite access and compare it	CO3- U	(8)		
		<ul><li>(ii) Explain direct sequence spread spectrum communication in detail.</li></ul>	CO3- U	(8)		

14.	(a)	(i) Explain in detail MATV and CATV systems with suitable diagram.	CO4 - U	(8)				
		<ul><li>(ii) Describe briefly communication payload and supporting systems.</li></ul>	CO4 - U	(8)				
Or								
	(b)	Elaborate the procedures involved in test equipment measurements on G/T, C/N <sub>o</sub> and EIRP with reference to the earth segment.	CO4 - U	(16)				
15.	(a)	Describe briefly the types of INTELSAT satellites with respect to basic space craft characteristics and vehicle types.	CO5- U	(16)				
Or								
	(b)	Discuss the services of the following system with its usage.	CO5- U	(4)				
		(i) VSAT						
		(ii) E-mail	CO5- U	(4)				
		(iii) BTV	CO5- U	(4)				
		(iv) DTH	CO5- U	(4)				